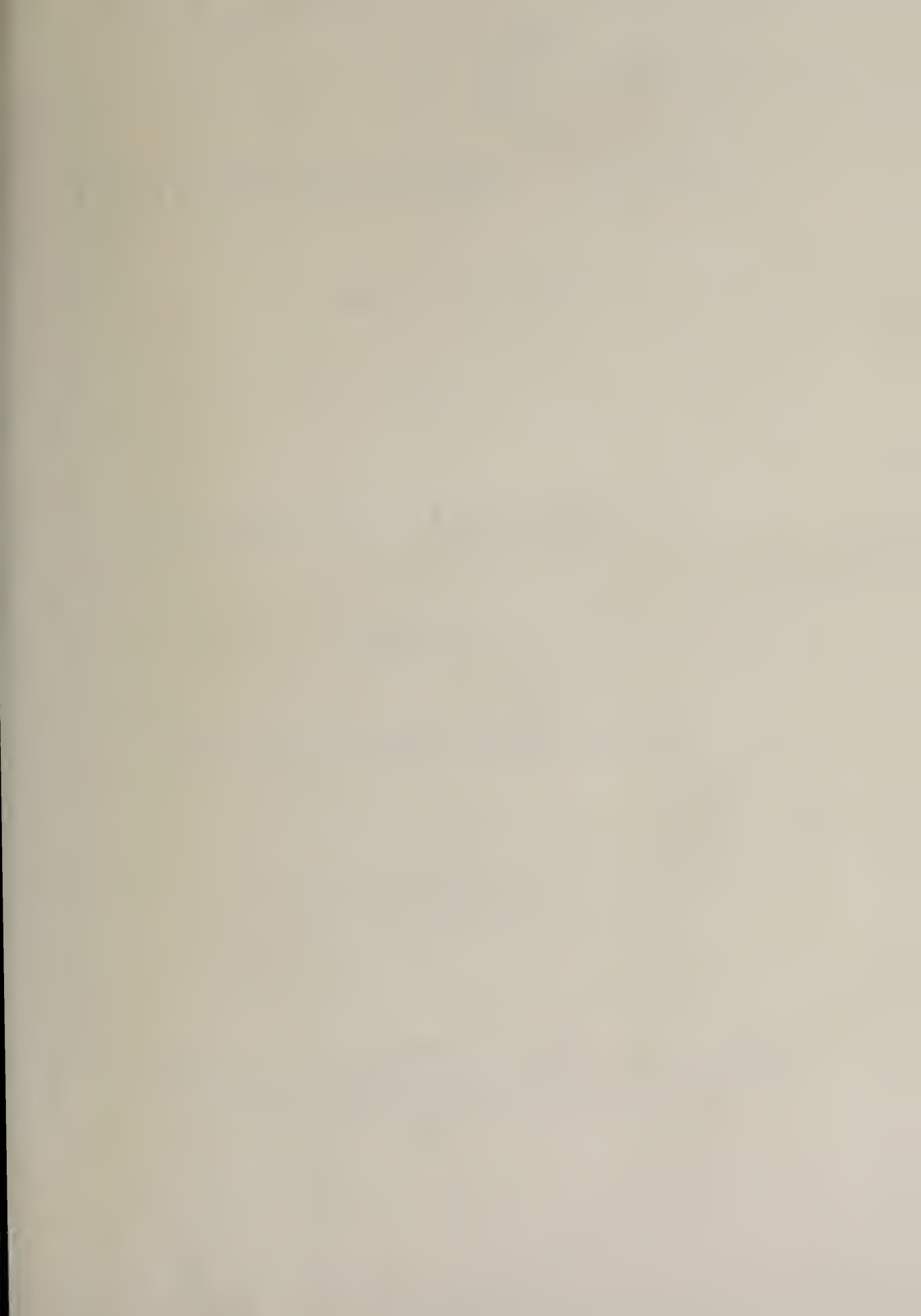
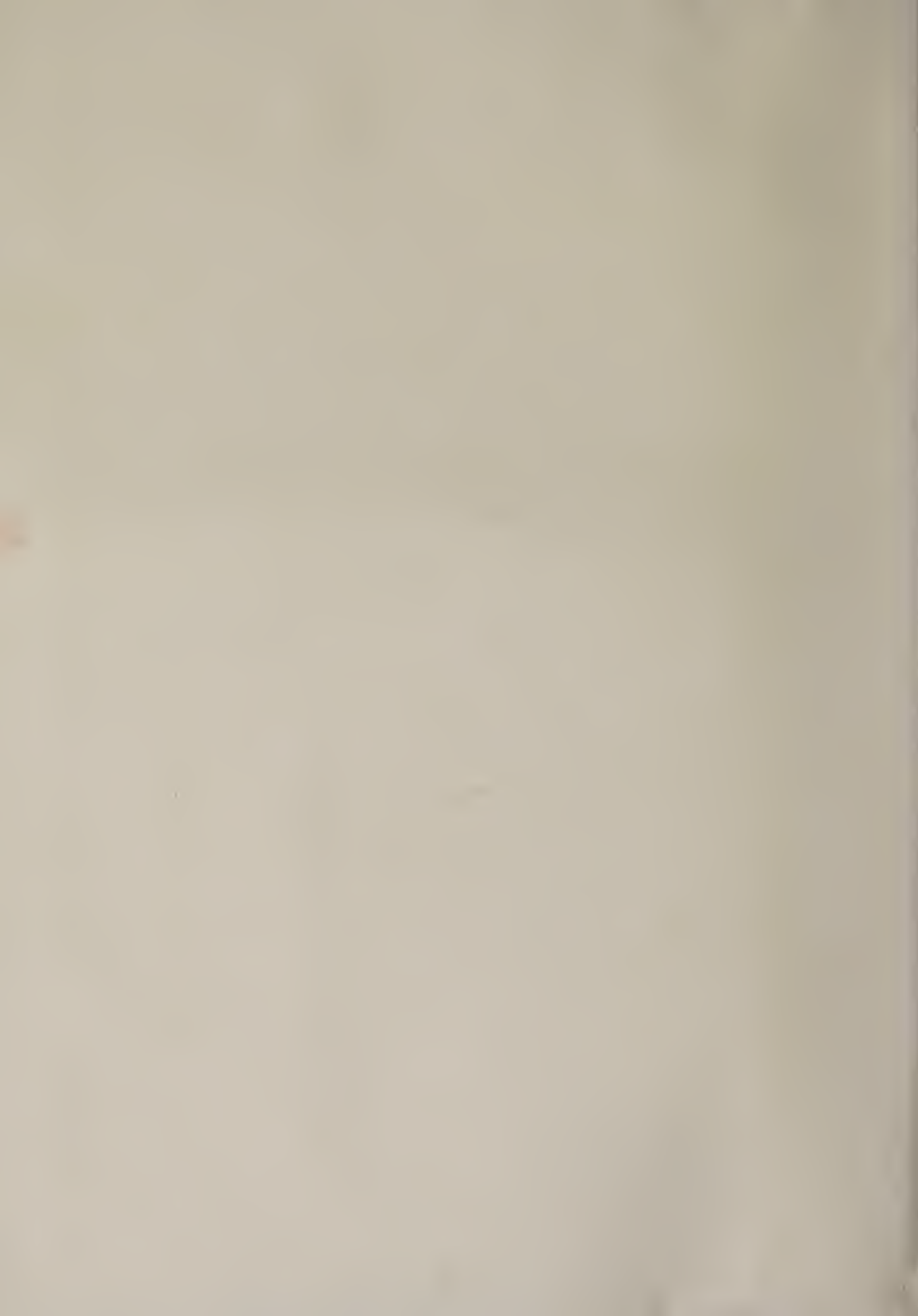
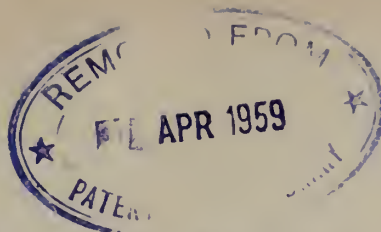


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THE



PHOTOGRAPHIC NEWS:

WEEKLY RECORD

OF THE

PROGRESS OF PHOTOGRAPHY.

VOLUME XXIII.

EDITED BY G. WHARTON SIMPSON, M.A., F.S.A.

Nulla recordanti lux est ingrata.—MARTIAL.

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PREFACE.

THE Volume of the PHOTOGRAPHIC NEWS just completed is, like those which have preceded it, a chronicle of twelve months' research, experiment, and result—a chronicle, in fact, of a year's work in photography throughout the world. But, unlike all others, it is chiefly devoted to the history of a revolution. The twelve months have witnessed a greater change in the practice of the art than has been seen by any former period. A dry process, far outstripping any preceding process in rapidity, has been quietly superseding the wet collodion process, in the studio as in the field, and bids fair to come into general practice. The gelatino-bromide process has met with almost universal acceptance.

The Volume which these words close contains a history of the experiences and the practice of this new outcome of the art, and will prove an invaluable text-book and guide in all matters of detail concerning it. The Editor wishes to all those who have contributed by their communications to make the Volume such a guide, as well as to all correspondents and readers, a Happy New Year.

Christmas, 1879.



The Photographic News, January 3, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO HIGH PRICES AND GOOD WORK IN PHOTOGRAPHIC POR- TRAITURE.—A NEW PROPERTY OF GELATINE.

High Prices and Good Work in Photographic Portraiture.—The price at which photographic portraits are sold on the Continent is naturally a subject of interest with photographers at home, and it is with considerable satisfaction that we learn from correspondence in our columns that high prices are still in vogue with us. Good work and good pay are always so closely connected that unless fair prices are asked, we naturally question the quality of the work. A sovereign for a dozen carte-de-visite portraits is no very large sum to pay for the best highly finished work, but of course the public will not give this amount for ordinary photographs which have no novelty of particular excellence to recommend them. We in England, there is no doubt, have a tendency to "rest and be thankful," in the matter of photographic portraits, as in other matters, and we are imitators rather than initiators. After the first Parisian and Viennese portraitists have adopted a style or format, we steadily follow suit and produce the same. This would not so much matter if Englishmen of the well-to-do classes were not travellers, and did not run over to the Continent once a year; but as such is the case, the styles are no longer novelties by the time we adopt them. "I saw that a year ago on the Boulevards or in the Graben," will be the reply under the circumstances. The only novelty of importance among the exhibits in the Paris International Exhibition—we mean in the French photographic section—were the tiny portraits vignetté on a translucent black ground. This style of picture, if it were once adopted in this country, would perhaps command as high a price as in Paris; but two or three years hence it will be different. It was the same with ornamental borders, with glazed enamels, and with the practice of fine retouching. In this country we were a long time introducing these modifications, and when they were once introduced, then everybody adopted them, and they became to a certain extent vulgarised, although, by the way, it is only a year ago that we were shown by a Dublin photographer a glazed *bombe* portrait by way of novelty, such as have been produced in Vienna for the past five years and more. The *Denier* photographs, again, so sharp and yet so exquisitely soft, although it has been asserted again and again that the effect was easily produced by printing with two films, have never been equalled in this country. Another Russian, Bergamasco, whose high class work has always been well paid, affords a further instance that photographers abroad, if they are successful, are quite deserving of their success. It is either that they have novelty or very good work to sell, and though they ask high prices they get them. It is very certain that unless they do receive good pay, they could never turn out such work. Everybody knows what a mere selection of prints will do. Let a series be ever so carefully toned and printed, you have no difficulty in selecting the best dozen out of twenty, and if you still further reduce the number to be chosen to six, the prints selected represent a much higher level of work. Therefore, unless high prices are not asked, work of a first-class order cannot be rendered. Finish and perfection cannot be sold for nothing, and if a photographer charges low prices, he must perforce sell an inferior article. Few would say that the first-class work of London and Paris photographers which commands high prices does not testify to the possession on the part of the artist of either originality, or novelty, or exceeding skill.

A New Property of Gelatine.—Gelatine is such a universal agent in photography that any information we can get of its properties is to be valued. Not only in the pigment or carbon process is it employed in very large

quantities, but also in photo-relief printing, and in negative work. Gelatino-bromide plates are already well-known for their keeping qualities and great sensitiveness, the rapid films of Mr. Swan being, we believe, prepared with the aid of gelatine. For this reason, photographers will be glad to know of a new application of gelatine to the preservation of food which has just been made in America. The setting or gelatinizing action of the material is found to exercise great benefits when mixed with liquid foods. Not only does it gelatinize them, and put them into a more portable form, but the gelatine acts as a true preservative. Neither is the mixture of gelatine and liquid so prone to mildew as before. As an instance of what may be done, we may mention that a pound of gelatine can be dissolved in a gallon of milk, and the resulting jelly will keep sweet and good a very long time. The jelly may be cut into strips, and the latter dissolved once more in a second gallon, with similar effect. Nay, more, the operation may be repeated until the original pound of gelatine is contained in no less than ten gallons of milk, which is thereby preserved in a wonderful manner from decomposition. Possibly photographers may see their way clear to employing the gelatine in like manner for preserving substances with which they have to do; but, at any rate, it is well worth their while to note this property of gelatine which has just been discovered. Our readers may remember that it is not the first time the material has been employed in the preservation of food, for the German commissariat used gelatine in the last war very frequently to manufacture cheap waterproof packing. Nay, one of the things that contributed to the success of the famous pea-sausages was gelatine added to another photographic requisite, bichromate of potash. By having recourse to this mixture, the costly skins hitherto employed for this packing were unnecessary. The sausage, a mixture of pea-meal and bacon fat, properly seasoned, was in universal request for the German army, since it formed at once a diet complete in itself, and one which was easily transported and distributed. Issued ready cooked, the soldier was able to eat it cold as he received it, or might make it into soup or stew. The supply of skins was altogether inadequate to the demand, and the price of these rose enormously with the scarcity. Indeed this want was at one time on the point of putting an end to the manufacture of the convenient food. Waxed cloth or greased linen permitted the fat to permeate through the interstices, and parchment paper was found to be equally unsuitable for packing the pea-meal mixture and resisting the operation of boiling. In this dilemma the employment of gelatine and bichromate was suggested. The sausage material was pressed into shapes of the most desirable form, and these were then dipped first in gelatine, and then into a solution of bichromate of potash. A skin was thus produced which, when dried and exposed to daylight, afforded a stout resistant, and at the same time as expanding a covering as that afforded by gut skin. In a word, the sausages were covered with a sensitive film and photographed. The same process is made use of sometimes by builders for waterproofing walls. Bichromate of potash solution is added to warm size, and this is then applied to a wall in the ordinary manner. The coating dries, and as the daylight acts upon it the surfaces gradually get photographed, and at the same time hard and waterproof. In all cases where a yielding waterproof material is desired, bichromated gelatine may be employed, and we doubt not but what it might be substituted in many ways for the expensive marine glue in daily use by mechanics and engineers.

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

The following table gives the results obtained by the

* Continued from page 6v9, vol. xxii.

above methods with different kinds of gelatine and glue:—

KINDS OF GELATINE.	Percentage of water in gelatine dried at 120° C.	Percentage of ash in gelatine air dried.	Parts by weight of water taken up by one part by weight of gelatine at 15° C.	Number of grammes that a ten per cent. solution of gelatine is able to bear.	Number of grammes that a similar solution, to which five per cent. chrome alum has been added, can bear.	Melting point of a ten per cent. solution in degrees C.
1 Gelatine from the "Black Dog." extra	17.61	0.68	7.1	1400	1260	35
2 Ditto, No. 1 ...	18.13	0.83	5.4	950	880	34
3 Ditto, No. 2 ...	17.44	0.95	5.1	730	890	34
4 Ditto, No. 3 ...	17.49	0.60	5.8	500	820	28
5 Collotype gelatine from Höchst-on-the-Maine ...	19.00	1.80	7.2	940	1040	33
6 Nelson's No. 1 gelatine, easily soluble	17.20	2.25	10.0	700	763	34
7 Ditto, No. 2, not so soluble ...	17.53	2.17	9.3	450	730	34
8 Moll's photo. gelatine	17.49	1.99	6.2	680	760	34
9 Collotype gelatine, manufac. unknown	16.36	3.61	7.0	700	890	34
10 French gelatine M. (photographic) ...	16.86	1.41	5.5	1200	880	36
11 Ditto, F and S. ...	17.01	1.00	4.6	1100	960	35
12 Kriwanek phot. gel. F. C. F. fr. Creutz.	17.88	1.91	10.0	860	830	35
13 Wilhelm, gelatine for cooking, quite transparent, W. H.	18.36	1.76	5.9	1300	1200	34
14 Seitz, bad collotype gel., opaque pieces	15.70	2.58	breaks up	10	30	20
15 Perfectly transparent, ordinary gel., soluble, thin cakes ...	20.33	2.28	7.5	347	360	35
16 Ditto, comere. kind	18.38	2.92	6.0	670	790	36
17 French pearl gelat., rather thick cakes, slowly soluble ...	16.33	1.88	5.9	610	670	34
18 Gelat. from Württemberg, yellowish, transparent, easily soluble ...	17.91	2.36	7.5	270	390	36
19 French, Laïne, same as the last ...	15.92	3.61	8.0	440	500	34
20 Gelat., thick yellow, trans., slowly sol., with a bad odour ...	17.00	1.93	breaks up	150	263	29
21 Parchment gelatine, same as the last ...	15.81	3.00	5.3	380	420	34
22 Good glue, yellow, slowly sol., smells badly ...	16.03	4.19	6.5	330	510	34
23 Brown glue, thick cakes, slowly soluble, opaque ...	10.20	4.53	3.9	160	220	33
24 Com. brown carpenter's glue, same as the last ...	9.5	5.06	3.6	50	80	30

Discussing this table, the author explains that the gelatines therein numbered 1, 2, 3, and 4, are manufactured by Messrs. Coignet and Co., of Paris; they are all transparent and colourless with the exception of No. 4, which is yellowish. No. 5 is an excellent gelatine for collotyping; it is used for that purpose by Albert, of Munich. No. 6 he find to be well adapted for carbon printing and photo-electrotyping, and No. 7 for collotypes, but there seems to

be no marked difference between them as regards their fitness for photographic purposes. Nos. 8 and 9 are excellent collotype gelatines, and so are Nos. 10 and 11; the latter are of Paris manufacture. No. 12 is a very good gelatine for the carbon process, as well as for collotype, for which latter purpose it is employed by Obernetter; it is labelled "Manufacture de Gelatine F. F. Creutz, Michelstadt 70, Blane 1st qual." No. 13 is a gelatine made to be used in cooking, though it is also well adapted for collotyping. No. 14 is manufactured by Seitz, and was by him submitted to the notice of the Photographic Society of Vienna, but it is of no use for photographic purposes. Nos. 15 and 16 are ordinary commercial gelatines of fine quality; they can be both, but especially the second, employed in photography. All the above are in the form of thin colourless leaves, which, after soaking, are easily soluble in water; but Nos. 17 to 24 are more or less yellow in colour, and are much more difficult of solution than the former. Nos. 17, 18, and 19 can be neither used in the carbon or collotype processes, and Nos. 20 to 24 are quite useless.

It will be seen that the amount of ash is in each case very small. This ash consists principally of the carbonate and sulphate of lime, besides a small quantity of alumina; traces are also found of phosphoric acid and silica, as well as of the oxides of magnesium and iron, and of the alkaline metals. The composition of the ash is in all cases nearly alike, only the relative amount of lime carbonate and of gypsum vary a little; the latter must not be regarded as adulterations, for they are necessary additions in the course of manufacture.

Alum may sometimes be used for adulterating gelatine, because it increases its consistency and its proneness to gelatinize; but as the addition of this salt deteriorates the quality of the gelatine for photographic purposes, it becomes important to be able to detect it. The addition must amount to at least ten per cent., or it will not produce the desired effect, and in this case it will increase the quantity of ash from six to seven per cent. A quantitative determination of the ash in any sample of gelatine is therefore at once sufficient to detect an adulteration with alum.

(To be continued).

THE POISONOUS NATURE OF CHROMIC SALTS.

BY M. DUCHOCHOIS.*

MR. PRESIDENT: I have the pleasure this evening of calling the attention of photographers to the poisonous properties of the bichromate used in the carbon and other photographic processes. When they were introduced in this country, most every one thought that the action of chromic acid was similar to that of sulphuric, nitric, and such acids, that disorganize the tissues only on the parts they have been in contact with. Unfortunately, for many of us, the danger is much greater. Not only a local disorganization takes place, but, by absorption into the system, this acid originates a disease of the skin, spreading to every part of the body, for which there is no sure remedy known.

I am one of the sufferers from the omission of the sellers of the carbon process patents, who in their oral, printed, or published instructions, did not caution anyone even by a single hint, against the terrible consequences of handling the bichromate solutions without extreme care.† My case has been a very serious one. The skin of the hands, on which at first appeared small itching vesicles, split and fell out in scales, leaving the flesh bare and uninclosed. The disease extended to the interior of the nose, under the eyes, the feet; in fact, to all parts of the body. The lungs were also affected, and after eight months there is still some dis-

* Read before the Photographic Section of the American Institute.

† Very early after the use of chromic salts came into something like general use, we devoted articles to pointing out the poisonous nature of these salts, both when taken internally and by absorption, and in our work on Pigment Printing, published in America by Anthony and Co., we devoted a chapter to this subject.—Ed. P. N.

order in the vital organs. I have been many weeks without being able to help myself, and the disease, now in its chronic stage, is far from being cured.

Shall it be concluded from these comments that the carbon process should be discarded? Not at all! I would be sorry to discourage anyone from working this beautiful process. But it must be constantly borne in mind that the greatest care must be taken not to let the bichromate come in contact with the skin in any stage of the operations. This can easily be done by wearing india-rubber gloves or finger-cots, and washing thoroughly the bichromate out of the prints before the development, as the warm solutions, no matter how diluted, will facilitate the absorption of the salt. But if by unforeseen accident the disease breaks out, it would be the greatest imprudence not to cease immediately to work by the bichromate processes until radically cured, for the salt in contact, with the sores (or the mucous) might penetrate into the circulation to such an extent that a true poisoning would follow. The disorder would then in some cases be so grave as to necessitate the amputation of the arms, and to endanger even the life of the patient.

RECENT ADVANCES IN THE APPLICATIONS AND SCIENCE OF PHOTOGRAPHY.*

CLASSED among the industries of Great Britain, it may be fairly presumed that photography has in recent years made some advance both in simplification of process, and in its applications to commercial purposes; and if we compare its present condition with that of ten years ago, the presumption is fully borne out. Yet if we take any particular year of the decade, it will be found impossible to allot to it any important forward step as regards the art-science—a sure sign that the progress made has been steady rather than rapid or in bounds. Ten years ago, for instance, our bookstalls were not adorned with periodicals whose *raison d'être* appears to be the publication of photographic prints of certain celebrities, nor did we find biographies and books of travels illustrated with photographs of persons and places, nor yet an artist's pen-and-ink sketch reproduced in *fac-simile* by the action of light on a metal relief block or engraved plate. To-day all of these applications of photography are common enough, and excite no surprise. The uninitiated, however, are little aware of the costly experiments and often unrequited labour which have been entailed in order to bring them to a successful issue. In scarcely any industry has capital been more unremunerative, or the public so little appreciative of merit.

Since the price of the weekly or bi-weekly papers, which are illustrated with, in some cases, really admirable portraits, is only a penny or twopence, it is not hard to understand that some cheap method of multiplying the photographs must have been discovered. Moreover, it must evidently be one which possesses marvellous delicacy, since the prints show all the delicate tints representing light and shade which rival the well-known silver productions. The process answering these requirements is the Woodburytype, so called from its clever inventor, and it will not be out of place to give a general outline of it. It may be said to be based on the production of a "squeeze" or mould in soft metal from a photographic print, in which the gradations of light and shade are represented by different thicknesses of gelatine. Into such a mould, which shows all the minutest differences in level of the original print, liquid and coloured gelatine is poured, and the excess is squeezed out by a flat plate being brought to bear on the paper, under which the mould and its contents are placed in a suitable press. The "shape" of jelly when set is removed with the adherent paper, and is allowed to dry, the metal mould being again available for a similar operation. Here, then, we have a means of producing prints by the thousand from photographic *épreuves*, or negatives, the cost of production being principally dependent upon the price of the coloured gelatine and of the labour.

There are other mechanical photographic printing processes before the public which are not used to such a large extent as the Woodburytype, being patronized more for commercial advertisements than for art purposes. To these may conveniently be given the generic name of "collotype," since the prints consist of surface impressions taken from a gelatine film

without the intervention of a metallic mould. We have seen how in Woodburytype a gelatine image in relief is necessary to form a stamp for the mould, but in these we have the image lying in a film of insoluble gelatine, and showing its presence by the difference in absorption of water by the light and shades. When such an image is produced in a film of gelatine and is moistened, it can retain greasy ink in exactly the inverse proportion to that in which it retains the water; and if lithographic ink be applied to it by means of a roller, a black picture, in all its gradations, is formed, capable of being transferred to paper by pressure in an ordinary printing-press. A certain amount of trained skill in applying the ink is required, and these processes are not, therefore, perfectly mechanical in practice, something being dependent on the judgment of the printer. They are, however, excellent as applied to photographs of machinery, trade articles, and landscapes, while for portraits they are rather uncertain. The carbon process, exemplified in such perfection by the Autotype Company, is too well known to need any description. It is sufficient to say that each print is procured by the action of light on a gelatine film impregnated with bichromate of potash, which renders the coloured gelatine more or less insoluble. When the soluble portions are washed away the print remains ready for transfer to paper. On the same principle it is that the initial print for the Woodburytype process is secured, though the basis of paper is replaced by a collodion film. Thus it appears that the advances made in printing processes are all due to the knowledge of the change effected on bichromates when in contact with colloidal substances, a knowledge which we owe to the researches of our countryman Mungo Ponton, though elaborated by Poitevin and other distinguished workers in the same field.

The execution of photographically engraved plates and relief blocks in metal has long been a desideratum, and more than twenty five years ago we read of attempts being made to render it practicable. With Niépce's original photographic process with bitumen the greatest measure of success has been obtained, as with it is practicable to form an acid-resisting image on a metallic surface. This surface can then be etched to the required depth, the bitumen image protecting the necessary portions, and prints can be pulled from it in the ordinary manner. Other methods are based on the production of electrotypes from gelatine images, and meet with great favour in some quarters; for instance, the beautifully executed maps of the Austrian Government are believed to be produced in this manner. Every day, indeed, these photographic blocks and plates are coming more into use commercially; in America we find weekly and even daily journals largely illustrated by cuts photographically reproduced; and some of our own periodicals indulge in them to an extent which an adept can discover is by no means limited.

In the facilities offered for taking photographic negatives, also, we have had a remarkable advance through the introduction of what are technically called the "emulsion" processes, which for rapidity and delicacy of image rival the old wet plate, and for simplicity entirely distance it. A photographic emulsion consists of a highly sensitive silver compound held in suspension in collodion or gelatine. When in the former, a glass plate has merely to be covered with a film of the fluid and then allowed to dry in the dark, when it is ready to receive and retain an impression of the image optically formed in the camera. When in the latter, though the manipulations for preparing the plate are rather more prolonged, yet when finished we have a surface which is sufficiently sensitive to be impressed by objects illuminated by lamp or gas light. For the amateur the nitrate of silver bath and its inconveniences are banished from the laboratory; and the stained fingers and clothes arising from the ordinary mode of bringing out the image on the surface are avoided by employing the alkaline method of development discovered by Major Russell some years ago. The load that the landscape photographer has to carry in the field has also been diminished by applying this emulsion to long bands of impervious paper, by which plan material for the reception of one hundred impressions can be carried with less inconvenience than half a dozen glass plates. To Woodbury and Warnock the credit of this invention is due, which would have been incomplete, and in no way superior (except as regards rapidity) to the old waxed paper processes, had not the latter shown us how the developed film could afterwards be transferred to glass for printing purposes. To the traveller unacquainted with the practical operations of photography this invention is doubly useful, as a band of this sensitive paper can be transmitted by

* The Times.

post, and the images impressed on it, perhaps thousands of miles away from home, can on arrival be converted into ordinary negative pictures, provided only that the duration of exposure to the lenticular image has been sufficient.

(To be continued.)

PHOTOGRAPHY ON WOOD.

BY PROFESSOR J. HUSNIK.*

RECENTLY I have been much engaged in attempts to obtain photographs on wood. The principal objects that I desired to secure were first, that the photographs themselves should be in an inverted position; secondly, that the wood should be acted on as little as possible by moisture and the different chemicals employed in the process.

My first attempts were made with white of egg and silver nitrate, but partly owing to its coming into contact with the caustic, partly in consequence of the many baths that it had to undergo, I found that the wood became soft and warped. This defect I endeavoured to get rid of by rubbing down the surface with pure water and chalk, and then coating it with caoutchouc; thus prepared the wood was dipped in white of egg, and submitted to the usual silver chloride process. The results obtained in this way were satisfactory, but the necessary labour and trouble were immense. In the ordinary silver chloride process on paper, where a complete photograph on paper is produced, when inverted negatives are not required, and where several pictures can be copied and manipulated at once, the work is trifling; but when in this case we take into consideration all the difficult operations, the troublesome drying of the wood after each copy, and further, the inversion of the negative, we should have to charge such a price for photographs of this kind that no one would care to pay it; it would be readier and cheaper to have the drawings made in the usual way.

I next turned my attention to producing pictures on wood by the bichromate process, using gelatine instead of albumen, and obtaining images of different colours by the addition of various metallic salts. Here, though the costly employment of gold was no longer necessary, and the operations were shorter, the price could not be much lower, so that I was compelled to find another and cheaper method.

The dusting-on process by means of the iron salts gave me a positive which, by aid of a collodion film, could be transferred to wood. In this case there was no tiresome manipulation of the wood necessary; but inverting the negative and washing the collodion film with ether were still troublesome operations.

At last I hit on the idea of taking collotype impressions on wood. Collotype plates were first prepared, and prints from them taken on pasted paper; these were laid, while still wet, on the wood, and then rolled up in a burnishing press. This method I found very satisfactory, for I had not to prepare the wood blocks, and of collotype plates I have a good store; only the negatives were obliged to be inverted.

I then tried to produce the collotype plate on a thin sheet of zinc, from which a direct impression could be taken on wood. This answered in every respect; moreover, the inversion of the negative was completely avoided, for an inverted positive was obtained on the wood-block. Fixing the gelatine film to the thin zinc sheet can be effected with certainty, but that, as well as the preparation of the collotype plate, requires skill and experience, as the sheet of zinc, which is as thin as paper, is never quite plane, and therefore cannot be dried in the same way as a plate of glass. (On a future occasion I intend to explain this method of preparing collotypes, in which I take Obernetter's experiences as a guide.) To obviate the last named difficulty I next adopted the method of exposing gelatinised paper alone under a negative, and when the chromium salt had been washed out, placing it on a plate of glass, and laying on the ink with a very small glue roller. With this I succeeded completely; I obtained beautiful pictures, perfect in the

half-tones, which could be at once laid on the wood-block, and be printed off at one impression. Gelatine paper can be easily prepared, and kept in stock, according to the process described in my book "*Das Gesamtgebiet des Licht-drucks*," by placing sheets of paper in a perfectly horizontal position, and coating them with a dilute solution of gelatine, and they need only be sensitised at the moment of use with a one per cent. solution of chromate; by this means the above described method is rendered thoroughly simple and practical, as well as being certain in its results. The wood-block itself requires a very simple preparation; it must be rubbed down with whiting to which some adhesive substance has been added. This rubbing can be best effected by the ball of the hand. Gelatine paper can also be purchased from the dealers, and even my own photo-lithographic transfer paper will answer the purpose very well, provided that, before immersing it in the chromate solution, it be wiped over a few times with a damp sponge, and then rinsed well in clean water. This is done to remove any soluble matter from the surface. Afterwards the paper is dipped for some minutes in a one per cent. solution of chromate, then drained, and hung up to dry at an ordinary temperature. Sensitised in this way it remains good for the above named purpose for from three to five days.

WHY SITTERS MOVE—AND THE REMEDY.

BY H. J. RODGERS.*

"You didn't keep still—shall have to try again." Some photographers seem to have learned this intuitively! There never was a result without a cause; but, with many operators, "double lines," dimness of the whole figure or in sections, proceed from one and the same cause, and it is too convenient to charge sitters with nervousness. It the negative plate, from carelessness, don't happen to be placed down properly in the plate holder, and the result is an indistinctness (especially of the head), then of course the sitter is a "bad subject to keep still." It does not seem to be good policy to charge the sitter with nervousness, as it has a tendency to make matters worse. Some other excuse for making a "sit over" would be better. Then, again, it would be well oftentimes to inquire whether the sitter, the floor, or the camera moves. Suppose during the exposure the impatient operator should, in a restless manner, step this way and that, resting his body on this foot, then on the other, wouldn't the camera move? And it is precisely the same effect in the negative as if the sitter moved. Suppose, again, during exposure the operator gazes rudely at a sanguine nervous person, that is inclined to modesty; or that if he stands by the camera in such a position that the sitter can bring his side face in the range of the point of vision. The sitter is in an uncomfortable spot generally—looking and winking at a mark. There is fear of moving, because of having been told not to move. There is a dread apprehension in the mind, and the feeling is not altogether home-like. The expression changes from sunshine to shadow—from timidity to fear—alternately, and the whole being seems encircled in a halo of the conjugal and mystical. Well, the sitter moves.

If the operator (when all ready to expose the plate) would just turn around with his back to the sitter (old-fashioned way) and then say, "Feel happy; you are all alone!" ninety-nine out of every one hundred would keep perfectly still previous treatment having been favourable. Many operators, become unconsciously brass-lined in a physiognomical point of view, and forget that there is such a thing as diffidence in an embarrassing place—such a beautiful and elegant trait of character as modesty. Another very common annoyance in moving is from a jar of the floor through various causes—the different kinds of industry which the building may contain—the action of heavy wind or vehicles passing by. There are, of course, many people who move from effects of ill-treatment received previous to sitting. The remedy of this great evil is a matter of much importance. Take, for in-

**Photographisches Wochenblatt.*

**St. Louis Practical Photographer.*

stance, people of refined temperament and delicate constitution. It is quite an undertaking to prepare for a picture. Although this preparation is unnecessary, yet fastidiously inclined people have a fervent love for the beautiful, and cultivate and prepare for it. At any rate, a person, after getting tired and climbing up into third and fourth storey studios, don't seem to be a hardy subject enough to be treated in a rough and ill-becoming manner. How many reception-room attendants do we find who are formal and unapproachable; not educated (in fact, nothing to educate); inflated to a bursting capacity with coarse, shoddy-clipped city airs; colder than a Hump-Ke-Dunk cucumber, and more indifferent than the weather-cock on a farmer's barn is to the cackling hen. Why is it not just as easy to be a little more humane—a little more filled with human regard and sympathetic feelings?

From this chilling reception the patron is ushered (sometimes in a hurry) into the long-dreaded operating-room to take the second degree in the process of "tempering and hardening."

Here, sometimes, the operator is equally cross, fretful, and impatient as the reception-room attendant. He complains over the perplexing results of which he has been the sole cause. He continues to become irritable, and grows blind with nervousness, and is unfit to prepare his sitter for that mood that is required for an every-way successful result. If the operator is quiet and gentlemanly in manner—exhibits a desire to *gratify* every suggestion and whim—even, if he *don't* if he would "shut off" this incessant talking—let every word be studied to please—make his sitter feel "perfectly at home," his "sit overs" would diminish in number, and his avocation would become one of pleasure. Then, again, these efforts (if efforts they are) will certainly be crowned with success—for he that conquers himself is far greater than he who conquers an army.

WHAT I KNOW ABOUT PHOTOGRAPHY.

BY E. H. TRAIN, OF MONTANA.*

ARRANGE your dark room so that it can be kept cool in summer and warm in winter, and be well ventilated (for health). Learn your light, and get control of it so that you can get your lights and shades to fall to suit you, taking care that the light on the eye is right, and do not get a "blind light" over the pupil. Buy none but the best chemicals of reliable dealers. Now take a gallon of distilled water (more if your bath dish will hold it, and it should not hold less); add nitrate of silver enough to make it thirty-five or forty grains to the ounce; when it is all dissolved, separate one-third from the rest, and saturate the two-thirds with iodide of silver; filter well, and pour back the other third; sun a day or two if you have time, or it will work without. Prepare your collodion after any good receipt.† Next put four ounces protosulphate of iron in a two-quart bottle, add sixty-four ounces water, cork tightly, and lay it on the table or floor, where you can give it a roll semi-occasionally, and it will be soon dissolved; let it settle, and filter off sixteen ounces, to which add one ounce acetic acid No. 8, and just enough alcohol to make it flow (which will be very little at first, and more as the bath accumulates alcohol from the plates dipped), and you a reliable developer. Now try a plate, and see if it works clear. If there is any fog, add nitric acid C. P., a little at a time, to your bath until it works clear.

The above is probably not the best formula in the world, but it is a thoroughly reliable one. Now your chemicals are all right, place your sitter so that his pose looks easy and graceful on the ground glass (pay no attention to anything else); slide your head-rest up until it just steadies his head without changing its position; talk him into a good humour with himself and the world; and "shoot your gun off," and if you do not get a good picture it is

your own fault; and if you do, you can do the same thing every time, as long as the conditions remain the same.

The next thing is to know where to look for trouble when trouble comes. I see that some writers (who, by the way, are fine artists, and have had much experience) say they always look for it in their collodion. With me, on the contrary, if the trouble is not in the temperature of the rooms or chemicals, in ninety-nine cases in a hundred I find it in the bath. Heat causes various and sundry troubles, and cold some, although it is not so much to be feared. In hot weather, keep your bath, developer, and plate-holder cool. Immerse your plates with a very slow but even motion, and let as little time as may be elapse between the sensitizing and developing of your plates, and you will have little trouble from this source. But, to return, the change in collodion is very slow, and always in the same direction, and any sample that will work clear once ought to always, or at least for a long time. Of course it will lose sensitiveness with age, and will grow thick in the bottle you pour from, from evaporation, but that is about all; while the change in the bath, particularly if it is a small one, may be rapid from the foreign matter introduced with the plates. I know that a change of collodion will sometimes remove a difficulty for the time, when, if the bath was all right, both samples would work. To illustrate, I once left my gallery in Montana (it is a long way from any place) in charge of a friend for some time, and when I returned he complained that none of the cotton that I left him would make collodion that would work, and he had to send to Philadelphia for some, and showed me several bottles that he had made at different times and condemned. I renovated one of his baths, and produced excellent work with every sample of his condemned collodion. But, from all this, I do not want you to infer that I would advise you to be always doctoring your bath; on the contrary, having gotten it in good working order, I recommend that you let it severely alone; put into it absolutely nothing but the cleanest of plates, and these only when necessary. Do not call in every paper by which to try your "chemicals" on; so long as it works satisfactorily, do not change its quantity or quality. If a scum gathers on it, skim with blotting or filtering paper, and filter it only when necessary, and it should work for a long time. When, however, you do get into difficulty, be sure first that it is not caused by the temperature of your rooms, or some similar cause, and that your collodion and developer are the same that have been giving good results; and then, if a little more acid in your bath will not set you right, I know no remedy but to renovate your bath by neutralizing and boiling, and that is a remedy that has never failed me for the last twelve years.

To be sure "that none go away dissatisfied," you should always have two or more baths in good working order, for it does not improve your reputation as an artist to tell people that your bath is not working well to-day, and they will have to come again. Usually, they will come no more for ever.

To albuminize plates, soak them a few hours in dilute nitric acid, wash thoroughly, rinse with dish water, and flow with albumen. While wet, flow them with about one-fourth ounce albumen to four ounces distilled water. Letting your plates dry after they come out of the acid will make the albumen refuse to flow.

Now, we can make good negatives; but about retouching, "aye, there's the rub!" That takes long and careful practice to do it well; but a few hints may not be amiss here. Round up and smooth your negative nicely, being very careful always to preserve and beautify the likeness. Soften and blend, but do not obliterate your shades. Look to the end of the nose; it usually wants some retouching, and is often overlooked; and to the eye; but here you must be very careful. In all your retouching, strive to make it so fine that your prints do not show it.

* Philadelphia Photographer.

† In this country it is better to buy a good commercial sample, of which there are many.—ED. P.N. ¶¶

The Photographic News.

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PHOTOGRAPHY DURING THE PAST YEAR.

FOR many years past in photography the seasons have come and gone and seen but little change. Steady and gradual improvement there has been, but no revolution in methods or processes. The last important change in practice, which began to be discussed about twenty years ago, was the supercession of pyrogallic acid development by iron. Much angry discussion as to the advantages of bromides in collodion and iron development preceded the general acceptance of the new system, which issued in greatly reduced exposure and improved quality of negatives. The old method was, however, defended with much tenacity, and was eventually superseded only by the stern logic of facts.

The next revolution in the mode of producing negatives will probably be more radical than the last; for, unless we mistake the signs of the times, the change will be from wet plates to dry plates, from the use of the nitrate bath for sensitizing plates to the use of emulsions. And the change will bring with it not only many elements of convenience, but increased rapidity of exposure.

The advance in general recognition gained by emulsion processes during the year is almost startling, and may be regarded as amounting to a revolution. Emulsion processes generally have during the year improved considerably, gelatine emulsion, especially, having made an extraordinary stride. Mr. Kennett, the introducer of gelatine emulsions, has steadily, during the few years which have elapsed since their introduction, worked at the processes, and maintained their superior sensitiveness, but until the present year he has had to bear the burden almost entirely alone, and of the people there were none with him. But during the past twelve months a silent revolution has taken place. Mr. Wratten has introduced a singularly ingenious method of washing gelatine emulsion, and not only so, he has produced plates of marvellous rapidity. Mr. C. Bennett, until a few months ago a comparatively unknown amateur, has astonished the photographic world by producing gelatine plates of such rapidity that he has produced upon them drawing-room interiors lighted with ordinary gas lamps; and Mr. Swan has produced commercial dry plates with gelatine of such rapidity and certainty that in the hands of many they supersede wet collodion for portraiture in the studio! Mr. Wm. Brooks on similar plates has produced interiors of dark underground caverns lighted only with paraffin lamps! The dry record of a few definite facts states with more eloquence than any carefully-prepared and glowing periods the nature and extent of the revolution which is in progress, and for which many photographers are still unprepared.

Thus the least pretentious and most unobtrusive has

been the most important work of the year. But other progress has not been wanting. Carboan printing, which, during the last few years, has been extending more or less tentatively, has, during the year just past, largely made good its ground. The doubts thrown upon its permanency have aroused attention to the subject, and the system has come out of the scrutiny with renewed vigour, and obtained general confidence. The fears expressed at the beginning of the year by Dr. Vau Mouckhoven, an early adherent of carbon, that the received method was not so trustworthy as was believed, and that there were elements of instability in carbon prints as usually produced, naturally occasioned much consternation. But the investigation which the suggestion promoted issued in renewed conviction that pigment printing, carefully conducted and with honest pigments, produced absolutely stable prints; and that the causes which led to the note of alarm were individual or local. Another alarm of a similar character arose from the experiments of another gentleman whose name was associated with early effort in securing permanent printing—Mr. Tunny, who, jealous of any doubt where permanent photographic printing was concerned, was induced to make experiments which issued in undoubted change in the prints under examination. The white portions of the prints became yellow under the action of light, as silver prints had changed under atmospheric influences. The announcement of this fact led again to renewed research, and again the obnoxious results were found to be traceable to accidental conditions: a sample of transfer paper to which the completed prints had been transferred was found to change under the action of light, losing its purity, and becoming yellow in tint. As a general issue, pigment printing stands firmer in public estimation than ever. Increased experience has been acquired as to the conditions of successful working, and a definite extension of this form of permanent printing is the result.

An important stride in permanent printing has been made by Mr. Willis, by the improvement in his platinum printing process. This ingenious method, when produced a few years ago, was at that time somewhat coldly received when it was known that both silver and hyposulphite were elements in conducting the process. It was alleged that they were only incidentally used, and were in nowise major elements in the process; but photographers—even those who adhere to the old method of printing—were indisposed to make a change unless their arch-enemy, hyposulphite of soda, were altogether eliminated from the new operations they were invited to adventure with. Mr. Willis has made a simple improvement in his process whereby the use of silver and hypo are both banished from his operations; and he now produces, simply and easily, images in pure metallic platinum of an intense black tone, of the stability of which no reasonable doubt can be entertained. Other noble metals, gold and palladium, and iridium, are said to be equally valuable for his purpose, and thus variety of tone may be obtained.

In ordinary photographic operations little change has been made. In the profession of portraiture, "trade" has been dull; and novelties have not been rife. The use of artificial light in portraiture has again excited considerable attention. The electric light, and the use of pyrotechnic compounds, governed by diffusive and reflecting agencies, have presented considerable promise.

Photography in its scientific phases has made more advancement than it had for some time previously. Captain Abney, an investigator of much ability, great perseverance, and rare conscientiousness, has fortunately devoted himself to this aspect of the art science.

At the great exhibition held in Paris, English photography, although but meagrely represented, took high honours, four gold medals having been distributed to exhibitors, and one decoration of the Legion of Honour, Mr. Dallmeyer having been the worthy recipient of the

honour which Frenchmen covet more than any other prize in the world. The Photographic Society's Exhibition in London was a success, although scarcely up to its usual mark.

Photographic societies maintain a healthy existence generally, without making much progress; but all those in existence are successful, and apparently highly valued by their members. There is room, however, for more of them.

FRENCH CORRESPONDENCE.

ENLARGEMENT BY THE GELATINO-BROMIDE PROCESS—A NEW PYROXYLINE FOR EMULSIONS.

Enlargement by the Gelatino-Bromide Process.—The process by means of the gelatino-bromide appears to be decidedly taking root among us. For some months it has now been much studied, and indefatigable investigators like M. Durand of St. Etienne, and M. Boivin, have succeeded in introducing not only great improvements, but also considerable simplifications, and in largely developing its applications. Very recently I have again received a letter from M. Durand containing some most interesting details of the means adopted by one of his friends, M. Blachon, an amateur, for employing this process in enlarging. His method of working is very simple. He commences by taking a negative in the camera on a plate prepared with gelatino-bromide, which he then develops, fixes, and washes as in the usual way. This plate he then lays in a dish of water to which 7 or 8 c.c. of ammonia have been added for every 100 c.c. of water. After remaining in this bath for a couple of hours the edges of the film begin to shrivel, and bladders are formed on its surface; the film then separates entirely from the plates and floats on the top of the water. It is then seen that the gelatine under the influence of the ammonia has distended itself, and the picture is therefore found to be considerably enlarged. This effect is analogous to that which is obtained by the instrument employed by lithographers for enlarging their drawings. In that case the drawing to be enlarged is transferred to an india-rubber disc, and when this is uniformly extended in all directions, the dimensions of the drawing are increased to the required degree. In the case that we are considering, when the pellicle, on which is impressed the photographic image, is detached from its support as above described, a glass plate of the necessary size is slipped beneath it, and as soon as the film adheres to it the plate is withdrawn from the water, and then placed to dry. By this means we obtain a very delicate picture, enlarged to about four times its former size, which can be intensified to any required extent. The thicker the film of gelatine, the more the print can be enlarged; at the same time an enlargement of four times in superficial area can be obtained with a film no thicker than those which are generally employed in taking landscape negatives. Detaching the pellicle from the plate on which it was originally formed can be facilitated by using a paper-knife or some similar instrument of bone or ivory. If, after being detached, the picture is not sufficiently enlarged, it is advisable to raise the temperature of the bath in which it has been immersed by adding in succession small quantities of water, each of which is hotter than the one preceding. In describing this process, due to the researches of his friend M. Blachon, M. Durand draws the two following conclusions:—(1). It is very important in the preparation of gelatino-bromide plates, as in the sensitising of carbon tissue, to ensure complete and rapid desiccation, in order that the adherence of the gelatine to its support may be as perfect as possible. (2). It is also necessary to avoid submitting the gelatine films for too long a time to the action of alkaline solutions, or to those of a high temperature. By paying attention to these two rules, and by employing an alcoholic bath for sensitising, as pointed out by M. Boivin, M. Durand asserts that he has never had occasion to observe the formation of reticulation or bubbles in his carbon prints.

A New Pyroxyline for Emulsions.—Apropos of the Russian gun-cotton recently brought into notice in England by M.

Leon Warnerke, M. Boivin, in a letter I have lately received from him, makes some remarks on a pyroxyline which he has used for some time with great advantage in the preparation of his emulsions. The method of preparing this substance was communicated to him by an army doctor, Dr. Touraine; it has been in use in military hospitals since the year 1855 for dressing wounds. The cotton is deprived of all gummy or resinous particles by means of alkalies, and this treatment makes it easily penetrable by acids, either at a high or a low temperature; it is thus admirably adapted for the preparation of all kinds of collodion. Up to the present time this gun-cotton is known under the name of *coton hydrophile*.

ERNEST LACAN.

INSURANCE RATES ON EXPORTED COLLODION.

BY NELSON K. CHERRILL.

I HAVE just received by the last English mail an invoice of charges made on the shipment to me of two cases of collodion, to which I think it would be well to draw the attention of those of your readers who are concerned in such matters.

The point to which I wish to draw attention is the absurdly high rate at which only insurance can be effected on such goods as collodion. I am charged at the rate of fifteen guineas per cent., and my shipping agent sends me a memorandum to the effect that that is "the very lowest" at which such an insurance can be effected, and that many are paying as high as twenty and thirty per cent. for the same risks. Now why should such enormous charges be necessary? There is no inherent danger in collodion, that it should render such an almost prohibitive insurance rate in any degree necessary. The charge finds its origin, I believe, in the superstitious ignorance of seafaring men, who regard chemicals of any kind as a species of devilry, and are glad of the smallest pretext for getting them off the ship. By one of those ingenious regulations by which merchant shipping is hampered, it is ruled that collodion, even though properly packed in tin-lined cases, may not be stowed in the hold of the ship, but must be loaded on deck, and, as I say, a deck-loaded case of collodion seems to be an object of terror to the sailor; he has a sort of professional spite against it, and at the smallest provocation, overboard it goes. I had an illustration of this only a few months ago, when a ship coming out here had on deck a case of twelve dozen of collodion for use. She shipped a sea which broke loose a hen-coop, and did some other trifling damage; but the occasion was only too tempting to the officer of the watch, who instantly ordered my collodion overboard for the benefit of Neptune's special artist. Again, to show that this summary treatment is quite the rage with the sailor mind, I might mention that I have just heard of another case quite as much to the point. Some relatives of mine, just landed here, came in a ship with some Government emigrants on board; on account of the emigrants, a case of collodion was refused freight. The matter was spoken of on the voyage out, and one day a storm sprung up, when one of the officers said to my relative, "It's a good thing your friend's chemicals were not here, because the first thing I should have done would have been to throw them overboard."

Under these circumstances, I think some steps might be taken to relieve Colonial importers of photographic materials from these additional risks, and consequently additional expense. It surely must be that the nature of collodion is not understood in the inner circle of those who make the regulations for shipping such goods. What more danger there is in a case of collodion packed in tin, than in a case of brandy packed in straw, it would puzzle many of these wise heads to say indeed; so far as danger to the ship goes, there is far more danger attending the shipment of wines and spirits than in almost any other class of goods, though the danger arises indirectly from the depravity of human nature, inasmuch as the sailors are almost sure to enter the hold and broach cargo, whereby the chances of fire are enormously increased. Indeed, I am told on good authority

that one-half the fires at sea are caused by this very thing. But this is a digression.

Very many of your readers are interested in this matter, and I cannot but think that if some steps were taken by export agents in London, aided by an expression of opinion from yourself and some of your more influential contributors, that perhaps the present regulations might be so modified as to enable collodion to be packed in the same way as alcohol, varnish, turpentine, and other equally combustible and not less dangerous compounds. If this were done it would make collodion at least fifteen per cent. cheaper in the Colonies, and what is, perhaps, on the whole quite as important, it would present an enormous annual waste of this article, as I cannot believe that Neptune's best artists can do any good with what the sailors so freely give him, as the salt in the sea would spoil his baths; and besides, his studio is very badly lighted.

THE NITRATE BATH.

MUCH used, and always abused nitrate bath. From the earliest days of photography till the present, the nitrate of silver bath for negatives has come in for its full share of blame for causing failures that it was entirely innocent of, and it will always be so until the day comes (if it ever will) when photographers will learn themselves the nature of that bath; what it is composed of, what it is required to do, and how it should be kept.

We might compare the nitrate bath to the human system. Let nothing go into it that will derange it; let it be governed by chemical laws, the same as the system is by natural laws; disregard the above, and they both will get out of order, and want doctoring. Now, we could fill a whole number of this journal on the nitrate bath alone, and not exhaust the subject, so we will confine our remarks to essential points, bearing in mind that everything that comes in contact with the bath must be pure and clean.

There is no doubt but that fused silver will make the most rapid working bath (if pure). Distilled (or filtered ice) water is also essential; pure iodides and bromides, and especially pure alcohol and ether, and some reliable brand of cotton for your collodion. Let any or all of these articles be impure, and it will disorder your nitrate bath. In cleaning your glass by the polishing method, or albumenizing it, especially if you use so many decoctions to preserve your albumen pure, this makes the bath impure. We have never found anything as good as pure albumen from fresh eggs cut up with fine glass in a bottle.

Albumen	1 ounce
Ice or distilled water	15 ounces

Then filter before using it. Leaving your bath uncovered will make it impure; leaving a plate in too long, or coating dirty plates, will produce the same effect; using different brands of collodion in the same bath will make it impure, the same as a change of food will often disorder the system; in fact, there are many things that tend to disorder the nitrate bath that are hardly thought of in our daily manipulation, such as handling your glass without thoroughly washing your hands after developing or fixing. This is one of the greatest sources of introducing impurities into the bath. Introducing carbonate of soda, ammonia, cyanide, permanganate of potash, acids, all tend to get the bath out of order. Any of those introduced into the bath may improve it for the time being, but it soon gets out of order again, and wants doctoring. We contend that a bath made pure in the commencement, and great care taken in using it, will last for years. Keep out all impurities when weak; add pure silver and water, and if your dipper does not reach within one or two inches of the bottom bath, it will not want filtering once a year. We know many galleries that work large baths that never think of filtering them from one year to another. One great cause of foul and impure baths is

the smallness of them, many not holding more than a pint, quart, or half-gallon of solution. So many ask why the large galleries make such fine uniform work. The secret is that they use large baths, holding from one to four gallons of silver solution, and never allow them to get out of order, by being careful in their manipulation. That is the principal secret of fine clear negatives in not continually doctoring your nitrate bath.

Silver	40 grains
Water	1 ounce

is a good standard to make a new bath by. It will work some seasons, well down to thirty-five or thirty grains, and up to fifty in very cold weather, if you have not your dark room warmed up. There are several ways of sensitizing a bath, but we prefer to coat the largest plate we can get into the bath, and let it remain in overnight, and if it heats off all the iodide that is in the collodion film, dip another. The bath will eat off only as much as it needs; it is generally considered the best way to make the bath slightly acid. We have always found it to work best at that stage. After your bath is mixed, acidified, and iodized, filter it through clean filtering cotton, or pure filtering paper. In all well-regulated galleries, two negative baths should be kept constantly in use, and in good order, especially where you have not the convenience of a very large bath; even then we would advise two baths; it pays in the end. If a bath shows signs of failing, which many will by not following the within instructions carefully, we advise the following:—Pour your solution into a large bottle (not more solution than to half fill it), then add pure water until it turns milky or creamy; shake it up well; let it stand in the sun, or (indoors it takes longer) till it settles clean; then filter it, being careful not to pour the sediment into the filter; next boil your solution down to about the original bulk it was, or to the quantity you may want; test it, and if not forty grains strong, add fresh silver to make it so, but if over, add pure water to reduce it; filter then, and it is ready for use. This bath does not want sensitizing, as there is generally enough of the iodizing solution left in the bath to make it work right off. This doctored bath generally works quicker at first start than a new bath. Test it, and see if it is alkaline or acid, and doctor accordingly; if neutral, add a few drops of diluted nitric acid. It is always best to introduce acid into the bath by diluting it first with a small quantity of water.

Seldom a nitrate bath wants boiling down to the fusing point, except ferrotype baths. If the above course is adopted, you will have but little trouble with your negative bath. It is a good plan to keep on hand some pure bath solution mixed in an extra bottle about sixty grains strong. You have no idea what life it gives to a weak negative bath to add fresh silver (unless you have tried it). When your solution in your bath gets low, you should never let your dipper touch the bottom of your bath unless you want imperfections such as comets and pinholes; keep the lid of your bath at an angle, so that dust and impurities will not get in, but ether and alcohol will get out. After your negative glass is well coated and set, dip it carefully in your bath, slow, and never stop till it is thoroughly immersed; when coated, which takes two or three minutes, according to the temperature of the solution, take it out quick and let it drip a minute or so on a couple of wooden pegs or a little dark closet that some have in their dark room for that purpose, and you have no idea what an amount of silver you will save in a year by catching the drippings.—*Practical Photographer.*

Correspondence.

THE FERRIC OXALATE PHOTOMETER.

SIR,—Your correspondent "Historiens" (I presume he is not the able writer to the *Times* who uses the same pseu-

donym) has in the last issue doubted the accuracy of a statement I made to the Photographic Society at its last meeting. It was quite probable that, in a discussion which arose on the spur of the moment, and trusting to memory, I might have made a misstatement, but I find that I am substantially correct. In an article in his Scientific Memoirs, Draper gives a detailed description of the ferric oxalate photometer in an appendix to that of his chlor-hydrogen photometer. The amount of chemical action of radiation effected on ferric oxalate was found by noting the amount of gold which the ferrous oxalate precipitated from a solution in a given time, or by measuring the carbonic anhydride given off. The chlor-hydrogen photometer was described in 1843, and presumably the ferric oxalate photometer was introduced somewhat later, but during the period in which Draper was paying attention to actinometry.

The remark that Draper makes in the same volume is corroborative of this idea. He says: "It may be remarked that the (ferric) oxalate is an excellent photographic substance. . . . I have in my possession photographs made by both these methods (i.e., developed with silver nitrate and tri-gold chloride) more than thirty years ago, which have undergone apparently no deterioration." "Historicus" will therefore see that at least in 1848 Draper was aware of the properties of ferric oxalate. Turning to page 173 of the second edition of Hunt's *Researches on Light* (1854) a description of the use of ferric oxalate is also given. In the *Transactions of the Royal Society*, Herschel also mentions that it can be employed for photographic purposes. One can scarcely suppose that Dr. Phipson in 1860 was in ignorance of the uses to which ferric oxalate had been put, though I have not his papers by me to see if this were the case.—Yours faithfully,

W. DE W. ABNEY.

THE LUXOGRAPH TESTIMONIALS.

SIR,—I note the correspondence which has been addressed to the photographic press by Signor Lombardi and Mr. Robert Faulkner. As my name has been incidentally mentioned therein, I feel compelled to trouble you with a few words of explanation.

I was present, in company with the above-named gentlemen, at a demonstration of the new Luxograph light, at Messrs. Alder and Clark's, and was so gratified with the results I witnessed, that I at once ordered an apparatus. Signor Lombardi's assertion that Mr. Robert Faulkner expressed his admiration of the new light—and that in no unmistakable terms either—is perfectly truthful; and I am somewhat surprised that the latter gentleman should now disavow that which I plainly heard, in common with Signor Lombardi.—Yours very truly,

EDWARD GREGSON.

Talbot Road, Blackpool, December 23rd, 1878.

SIR,—Permit me to state the facts relating to the luxograph testimonial—so distorted and exaggerated by Signor Lombardi in his letter published in your issue last week. Accompanied by my friend and operator, Mr. Ross, I witnessed a demonstration of the luxograph light. Pleased and amused, I yet declined to give Messrs. Alder and Clarke a testimonial as to the value of the light, or to purchase the apparatus until it was improved. Two days afterwards, talking over the affair with Mr. Ross, I thought I saw a means to fitting up the luxograph apparatus in an improved manner; and, at my request, Mr. Ross called on Messrs. Alder and Clarke to inform them of my plan, and to request them to supply a portion of the apparatus, for which I was willing to pay £15 15s.—a very liberal price for what I wanted. He was also to promise a good—not a "splendid"—testimonial as soon as I had tried the light and personally proved its value; also to supply them with copies of the pictures produced by the aid of the light. This offer was declined with the very significant remark—"As to Mr. Faulkner's testimonial, we can get that," the meaning of which became evident the following Friday. When the

luxograph testimonial written by Signor Lombardi was published, I then saw, to my surprise and annoyance, that my name had been put forward without my knowledge, as endorsing Signor Lombardi's enthusiastic and eulogistic opinion of the luxograph.

In consequence of a letter written to Messrs. Alder and Clarke, one of these gentlemen called on me. I requested him to withdraw my name from the advertisement, and to state that it had been added without my knowledge or approval. This he declined to do for the following reasons:—That he considered Signor Lombardi was my friend, and therefore must have known my sentiments on the subject, and that I had promised to give them a testimonial (when confronted with Mr. Ross he was compelled to admit that this was to have been given conditionally). I explained to him that if the practice of using a man's name without his consent were tolerated, there would be an end to all candid expression of opinion, and a system of mistrust would be engendered.

So far from Signor Lombardi being a friend of mine, I had only met him four times, and I knew nothing whatever of him except what he had told me of his ideas and mode of conducting his business; and, judging him from his own words, I should have a very strong objection to having my name associated with him in any affair whatever. The publication of my name, for the purpose of puffing the luxograph, was a piece of gross impertinence on his part, and of sharp practice on the part of Messrs. Alder and Clarke.

During the demonstration I heard Signor Lombardi ask to be taken into partnership, and from the fact that the offices of the Luxograph Apparatus Company are now at his studio it is only reasonable to conclude that an arrangement has been entered into between Messrs. Alder and Clarke and Signor Lombardi; hence his enthusiastic advocacy of the luxograph scheme, and his abuse of me is a mere vehicle for that purpose.

I regret exceedingly to have occupied so much of your space.—I am, yours, &c.,

ROBERT FAULKNER.

21, Baker Street, W., December 30, 1878.

THE PRIZE INSTANTANEOUS PICTURES.

SIR,—I cannot undertake to follow Mr. Jennings into his attempts at excuse. My knowledge of the matter is limited to my handing my friend's order to a trading firm, and that the order was not correctly executed. In my opinion, the Photographic Society should take notice of this improper dealing with prize pictures.

Mr. Jennings should have had the courtesy to apologize for his error, and the honesty to offer to exchange the wrong prints for right ones.

H. STUART WORTLEY.

December 23rd, 1878.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held at the Memorial Hall, Albert Square, on the evening of December 12th instant; Mr. CHARLES ADIN, President, in the chair.

The minutes of the last meeting were read and passed. Mr. John E. Macdonald, of Cheetham, was duly elected a member of the Society.

The PRESIDENT read an address elaborating upon the subject of negatives and artistic photography, prefacing the same by some remarks in reference to the altered positions of officers in the Society, and in a very flattering manner spoke of the long friendship and esteem he had always entertained for the new Secretary, Mr. W. J. Chadwick, and hoped that their unanimous working would be felt and appreciated by the Society.

Mr. JOHN HOLDING said (as he also belonged to that body of artists whose pictures were produced by the aid of the pencil and brush) he felt bound to disagree in some measure with a few points in Mr. Adin's communication, and said the opinion *artists* entertained of photographers was, that they were mere "mechanical operators," and often, too stupid to listen to the advice of an

"artist like himself." Even on the occasion of the last excursion of the Society, he tried to persuade some of the members to take their pictures from a point of view which he thought superior to that which they had chosen, but they would not; they were "too clever," and would go on in their own stupid way in spite of his advice; and although many of their photographs were fair copies of the subjects they were to represent, they wanted "his eye" and "his ideas" to make pictures, and he could not agree with Mr. Adin that art was to be classed with rules. "Art was a natural gift, and could not be learned by rules."

Mr. ADIN said he thought many artists would do well to take a few lessons which photography could easily teach in the study of nature.

The SECRETARY then read a short communication from Mr. M. Noton on Mr. W. J. Chadwick's duplex gas lamp, which, it will be remembered, was before the members at the last meeting.

Mr. ROBERT KNOTT, who was unable to attend, sent two silver prints from carte-de-visite negatives which he had printed by the electric light, one printed at twelve inches distant from the light in fifteen minutes, and the other at twenty-four inches distant in thirty minutes. The latter, equal to half the exposure of the first, was by far the best and fully-exposed.

Mr. HARRISON GAITSIDE also exhibited a print by the electric light exposed under similar conditions.

Mr. GEORGE GREGORY then exhibited a series of excellent portraits, some of which had very pretty effects introduced; he exhibited the negative from which the prints were taken. He called attention to the method he had adopted, and although he claimed no credit to the originality of the "dodge," he thought it might be new to some and interesting to others. At the back the negatives were gummed, in some instances as many as three or four layers of thin tissue paper, portions of which were torn away in places where force in the picture was desired, and for introducing high lights, &c. He had found the tissue paper an excellent medium for "touching" upon. He (Mr. Gregory) also exhibited a landscape monochrome in oil, which was the subject of some little discussion.

The SECRETARY (Mr. W. J. Chadwick) said, at the request of several of the members, he had written to Mr. L. Warnerke, but as that gentleman was at present in Russia Mr. Payne Jennings had kindly sent two 12 by 10 transparencies printed on Warnerke's tissue. These were carried round and examined by the whole of the members with deep interest and admiration. Mr. W. J. Chadwick briefly explained the development and manipulation of these tissues. Many of the members were so interested to give the process a fair trial.

Mr. W. J. CHADWICK then exhibited in action the original oxy-calcium lamp invented by Canon Beechey thirty years ago for illuminating two or three optical systems of a magic lantern at one time by one light, consisting of a fountain oil lamp with circular wick, in which olive is burned with a gentle stream of oxygen gas passed through the centre of the flame. A small ball of lime is suspended over the flame, the lower portion of which, being rendered wholly incandescent, produces a light of great brilliance.

Mr. W. WATTS introduced a very novel and convenient little electric battery of great power for use with the sciopticon, and constructed to fit into the hollow space in the front portion of the base of that instrument; for displaying many beautiful electrical phenomena on the screen, such as the decomposition of water, &c., it was highly appreciated. He also exhibited some other apparatus in connection with electricity and lantern appliances, but as the evening was now far advanced, promised to enter more fully into the details on a future occasion.

The SECRETARY then called attention to three magic lanterns of the oil-burning family sent for inspection and trial by their respective makers. These were carried into the lantern room and lighted, but owing to the late hour of the evening many of the members wished to leave (having to go by train, &c.); the trial was, therefore, postponed for Saturday, December 14th, and twelve gentlemen were nominated to attend and act as judges. However, a short time sufficed to satisfy those present that one of French manufacture, although burning two two-and-half inch wicks, was inferior to the other two, viz., a Newton's lantern fitted with a *triple wick refulgent lamp*, and an improved sciopticon. This latter instrument had a recently introduced addition by which the picture could, by means of a movable stage and rack-and-pinion, be moved from the condenser, thus permitting it to be placed in the more concentrated portion of the converging rays, so that the whole (or nearly so) of the light was allowed to pass through the aperture of the slide.

On Saturday evening (the appointed time for trial) the President and those gentlemen most interested in the lantern gave judgment unanimously in favour of the sciopticon for intensity of illumination, whiteness of light, and better definition. The trial was conducted in the following manner:—The triple wick refulgent lantern and the improved sciopticon were placed on an elevated platform, and as the objectives of the two lanterns were not quite of equal foci, the lanterns were arranged at such distances that each projected a disc of eight feet diameter with pictures having the same size aperture ($2\frac{1}{4}$ inches); three slides were procured from Mr. Frank N. Good's negative of the lattice windows of Carlo printed in carbon and of equal density and colour, and so near alike that experienced photographers were unable to distinguish any difference. The judges, after seeing the lights in each lantern burning satisfactorily, took their seats beneath the lantern platform, so that they were unable to tell by which lantern the picture on the screen was shown, and as each was exhibited alternately, they gave judgment, and in every case decided in favour of the sciopticon. Next the two pictures were partly covered with a piece of opaque card, so that from each separately only one-half of the picture was shown (the same side of the slide in each case); but when the two lanterns were allowed to project their sinicircular pictures upon the screen at the same time, a complete disc was formed. The sciopticon half was again pronounced the brightest and best definition. The pictures were changed about and reversed with the same results.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

A MEETING was held October 1st, the President, H. J. NEWTON, in the chair.

The minutes of the last meeting were read by the Secretary, and on motion, approved.

After some routine proceedings,

The SECRETARY: Mr. Duchochois has handed in a paper which he requested me to read, and which he will explain, if necessary. (see page 2).

Mr. ROCHE: I have used bichromate of potassium in all manner of shapes, and it is a very dangerous thing. I am very careful to wear rubber finger-cots, and afterwards to thoroughly wash my hands not only in cold but in warm water.

Mr. HOGAN: I am surprised to hear that the gentleman has been suffering from the effects of bichromate of potassium. I have used it every morning for four years, and never have felt the slightest injurious effects; neither have my men. We don't take any especial care in using it.

Mr. LAMBERT: It may be more injurious to some constitutions than to others. I think the fault must be in the constitutional weakness of the person, and not in the process itself. The process is quite harmless, if care is taken in working it. Cyanide of potassium is an active poison, and really very poisonous if it touches the mucous membranes, more so than the bichromate of potash.

Mr. DUCHOCHOIS: I am surprised to hear Mr. Lambert say that the bichromate of potassium is quite harmless. Anybody knowing its properties will tell you that it is one of the most dreadful poisons used. Cyanide of potassium is a poison, it is true; but it will not go into the circulation as readily as bichromate of potash. We avoid a danger if we have any warning of it; but we have not had of this poison. Those who sell the carbon process do not even by a sign or word, spoken or printed, tell us of the danger of using it.

Dr. HIGGINS: Does Mr. Duchochois know personally of any other case similar to his own?

Mr. DUCHOCHOIS: Yes; the Spencers, two young men working in Philadelphia. Mr. Howard has been affected by it, and a lady in a well-known New York gallery. In Europe it is so well known that operatives refuse to work with it.

Mr. LAMBERT: If people mix it or take it from the bottle with their bare hands, or put it in the dish and stir it with their naked fingers, the poisonous effect cannot be wondered at.

Mr. MASON: There seems to be a misunderstanding in regard to this matter. I understand that Mr. Duchochois does not say anything against the bichromate process, but claims that there should be in the printed instructions sent out by the lessees of the bichromate process, or given to the workmen using it, something cautioning them against the improper handling of the solution; he does not condemn the process.

Mr. LAMBERT: Every bottle is labelled poison under the U. S. laws.

The PRESIDENT: Many things that are poisons are not poisons by absorption, as this is found to be.

Mr. DUCHOCHOIS: I will caution everybody that uses bichloride of potash not to let it come in contact with any part of the body. It was the duty of the sellers to have told us this at the beginning.

Mr. LAMBERT quite approved Mr. Duchochois' remarks.

The PRESIDENT: I think it is the general understanding that explicit directions should be given that such articles should be used with care.

Mr. ROCHE exhibited some fine prints done by a process which he had devised by using ordinary printers' ink and a very simple press.

Mr. COOPER exhibited a large series of very beautiful carbon prints by a new process which he did not explain to the Society.* The experiment made by Dr. Higgins was as follows: A clean plate was flooded with bromo-iodized emulsion (formula not given), put in a printing-frame in contact with a negative, and exposed one second to an ordinary gas flame. Upon removal from the frame, a fully exposed and developed picture was seen.

Mr. NEWTON: After this very interesting experiment of the Doctor's, I have some things to show myself. Prior to doing so, however, I would like to say a word in reference to one particular paragraph of the Doctor's paper. It would appear by that as if I were indebted to the Doctor for my accelerator, the formula of which was read in the minutes of the evening. It is not the case.

Dr. HIGGINS: May I be allowed to state that I would not have it inferred so in the least?

Mr. NEWTON: I had tried alkali on plates before exposure long before I was acquainted with the Doctor or ever saw him. But the point in my accelerator and the experiments I went through with were to get the minimum amount of bromide that could be used; in that way I got the greatest degree of sensitiveness with the alkali upon the plate before exposure. Now I have some instantaneous negatives on emulsion dry plates. In the first place, the question has been frequently raised in reference to the keeping qualities of emulsion, and in the minutes of the last meeting, you will observe, some was spoken of which was over two years' old (about two and a quarter), that had not changed for the worst in the least. One year ago this month some of my emulsion was sold to a gentleman going to Brazil, S.A. He bought two half-pound bottles, and one of them he brought back unused early in last September. Mr. Price obtained it from him especially for me to try. Mr. Price made some dry plates with it, and requested me to try them. I here show some pictures taken in the Park instantaneously on those plates, and others, prepared by Mr. Price. They were not intensified at all, but are just as they were developed and fixed. I made three portrait negatives, two of which are now exhibited, with this emulsion exposed wet. It was not quite so sensitive an emulsion as they are making now, but these negatives were made in six seconds under an unfavourable light. The negatives and prints were all that could be desired, and were pronounced by those present to be perfect.

Dr. HIGGINS: I find in the way of instantaneous photography that with any really good, decent emulsion—such as the present time gives us—there is not the least trouble in taking an instantaneous view. I have been in the habit since last spring of almost daily taking the various steamers that pass my house. An exposure of the twentieth of a second by calculation is sufficient. At the next meeting I will most likely bring you prints of steamers taken as late as five o'clock—it is almost dark at that hour now—with an exposure of the twentieth of a second.

There is a very marked difference between the negatives shown here by Mr. Newton and my negatives—instantaneous ones. I can only attribute it to his fixing with cyanide, instead of with hypo.

Mr. NEWTON: No, that is not it.

Dr. HIGGINS: My negatives have not that appearance. Those have the appearance of the ordinary bath plate, whereas my emulsion always gives a very strong, black image, very intense. I did not know but what you fixed it in cyanide, because that changes the colour.

Mr. NEWTON: I sometimes fix in hypo, and sometimes in cyanide; but I dislike to get hypo. on my fingers when I am experimenting with emulsion. The appearance of the negatives is the same, whether fixed with cyanide or hypo.

Dr. HIGGINS: In the matter of development of emulsion plates, the quantity of bromide necessary is dependent entirely upon the particular character of the emulsion and the way in which it is compounded. Every emulsion requires to be properly adjusted,

and a special developer. With my emulsion I can only use my developer—the one you see here. I can keep it on the plate an hour without fog—it is impossible to fog with it; it would simply give more and more intensity. Mr. Newton makes a developer to agree with his emulsion, and I understand that my developer does not work well with his emulsion, and I know that his developer upon my emulsion plates will fog. Aside from the point that every emulsion requires its own particular developer, there is this to be stated. If upon the exposure of a plate you take the developer (I will speak of mine for my own emulsion plate), and instead of using at the ordinary strength, which is very weak, as you can see, you simply take half an ounce of water, and add two or three drops of the developer to it, it will give you a beautiful development, very slow; and although sufficient intensity is gained by that weak condition of the developer, your image will be of an exceedingly soft character—too much so. If, on the other hand, on the same normally exposed plate you use my ordinary developer, but make it double the strength, the image will flash out as quick as a bath plate, and the resulting picture will be very strong and harsh, with a great want of fine details. But this is an exceedingly good development for lithographic purposes, where strong contrasts are required; and so, by varying the character of your development, you can give every desired character to the emulsion plate. I care not what the composition of that emulsion is, whether it is bromide or bromo-iodide, if the emulsion works too soft or too harsh, vary your development, and see what you will get.

Mr. NEWTON: I should not agree with the Doctor in his conclusion that every emulsion requires a particular development, or developer, rather. As a rule, the alkali developer is the developer, and the carbonate of soda is becoming the most frequently used alkali. I now have some three hundred samples of emulsions, compounded with various and all heretofore used salts, and many which I have never known to be ever used, and compounded in a great variety of ways, and on all of these the carbonate of soda developer works well. Now the amount of bromide that is put in, and the strength of the alkali solution, of course, will vary the result; but there is one fact that I have observed that I am not aware has been observed by others, which is, that an old emulsion requires very much less bromide than a new one in the developer. Take an emulsion a year or two old, and you need not use so large a quantity of bromide. But whether the developer which the Doctor calls his would develop my emulsion, I don't know, but I have no doubt it would. I have never tried it, and if the Doctor has, he knows. When I originally gave the carbonate of soda developer to the Section, I exhibited a large number of negatives developed with it. The formula which I then gave I stated was used in developing these negatives. I also stated that it could be used with any modification of the given strength, varying with the time of exposure or effect desired. I also stated that I had used it as strong as eighty or ninety grains to the ounce, and further that the action could be greatly accelerated by the use of ammonia, the formula for the use of which I then gave.

Dr. HIGGINS: I don't dispute the power of sal-soda to develop any emulsion plate. I simply am of opinion that the quantity of sal-soda and the quantity of restraining bromide in an alkaline developer is with good result varied to suit different emulsions.

Mr. NEWTON: The point, as I look at it, which makes the developer act is the exposure. If the image comes out slow and hard, and lacks detail, there is some fault either in exposure or developer; that is all. If your exposure has been right, you will get detail in the shadows by proper development.

Mr. DUCHOCHOIS: With the same exposure you will find that two developers produce entirely different pictures; the one will be black and white, and the other full of detail. I agree with Dr. H. that, with a particular emulsion, you must have a particular developer.

Mr. NEWTON: It is just the same with a bath plate.

Mr. ROCHE: I had some Liverpool dry plates. I tried Newton's developer without satisfactory results. I then tried the developer made according to the formula sent with the plates. They then came out fine, soft, and full of detail. I think Dr. Higgins is right.

Mr. NEWTON: A reverend friend of mine from a neighbouring city bought twelve dozen of those Liverpool plates, and followed the printed instructions exactly in developing, and got nothing worthy of the name of a negative. He tried the carbonate of soda, and they were very sensitive, and made as beautiful a negative as you ever saw. This is simply an illustration of an oft-recurring anomaly, where quite different results are obtained by

* We understand that the prints exhibited by Mr. Cooper were such as are elsewhere designated Artotypes, made in fatty inks, and by means of a press.—Ed.

different persons using the same photographic compounds. The gentleman referred to, in order to further satisfy himself in regard to the action of the soda developer on the Liverpool plates, brought some of them to my studio for me to expose and develop, which I did with equally satisfactory results.

Mr. ROCHE: Don't you modify your developer to suit the exposure?

Mr. NEWTON: Of course I do—stronger or weaker, with either more bromide or more soda.

Mr. DUCHOCHOIS: It would be better to decrease or increase the amount of bromide.

Mr. NEWTON: You want more bromide to develop a dry plate than a wet one.

Dr. HIGGINS: I don't think there is any difference at all between the President and myself. The President varies the proportions of alkali and bromide to suit individual exposures, and I, of course, agree that he is correct there. I, however, go a step further, and say that when you can have a developer which needs no alteration in any shape or manner in the proportions of the ingredients for the different exposures, that we have got a more desirable developer.

Mr. NEWTON: If there is a developer that will produce uniform results without much reference to exposure, that I admit would be desirable; but I can take a wet or a dry plate, like those I exhibit here—here are two, one exposed thirty seconds and the other fifteen, and one equally as good as the other, and both developed with precisely the same developer. That latitude you have not got in working a bath plate; but that latitude can be carried still further by varying the strength of your developer, so that you can expose the plate fifteen seconds or a minute, and get equally good results. In reference to the keeping qualities of emulsion, that is a very important thing. This instantaneous plate was made with emulsion that had been to Brazil, S.A., and remained there through the winter, and was brought back in the month of September. Those two portrait negatives were made with it in about six seconds; so you see that it is not changed for the worse, and, if anything, it has improved. I have emulsions now that will be three years old in November. The last time I tried them they were two and a-half years old, and worked satisfactorily. I presume the doctor will corroborate me in reference to the keeping qualities of emulsion. Having it so that you can use it any time within a year, or two years, you can feel sure that you have something that you can make a good picture with.

Dr. HIGGINS: In the absence of organic matter and free silver, I believe that an emulsion will keep indefinitely. I find it to keep for years without free nitrate or organic matter introduced into the emulsion.

Mr. NEWTON: This emulsion that I have just spoken of, nearly three years old, I put into every ounce two grains each of pyrogallie acid, tannin, and gallic acid—that at the end of two years made as beautiful negatives as I have ever seen.

Dr. HIGGINS: I said that with the absence of organic matter and of free nitrate of silver, I believed an emulsion will keep indefinitely. The President will certainly agree with me there.

Mr. NEWTON: Certainly.

Dr. HIGGINS: The President goes further, and thinks that the absence of organic matter is not necessary.

Mr. NEWTON: I am stating the fact.

Dr. HIGGINS: I, myself, should be afraid to trust an emulsion with organic matter. The only way in which I think it could have happened was that there was a large amount of silver used, so that the organic matter was taken out by the quantity of silver and rendered inert, and the emulsion left, as it were, without it.

Mr. NEWTON: The organic matter in that case was put in after the free silver had been converted into a chloride. I might as well state, in reference to the organic matter, that these plates exhibited were made from the emulsion that went to South America, and which was strongly organified; that there is a large quantity of organic matter in it, and it is not necessary to add anything more. Flow the plate, and wash it in clean water, dry, and it is ready for exposure.

Dr. HIGGINS: If that emulsion is organified, why do you wash the plate after flowing it previous to exposure?

Mr. NEWTON: Do you mean to ask me whether it would be just as good without washing?

Dr. HIGGINS: Yes.

Mr. NEWTON: Well, I have not tried it.

Dr. HIGGINS: The only object of washing, as I understand it, is to get rid of the soluble salts, and, in doing so, to organify the plate by the organic matter in the water.

Mr. NEWTON: I have not tried that emulsion in that way. I agree with you that the washing is a good thing. My opinion is that washing is a first-rate thing for emulsion dry plates.

Mr. DUCHOCHOIS: The washing of the emulsion was absolutely necessary to obtain great sensitiveness, by removing the soluble nitrate, which interferes with the action of the light, especially the blue rays.

Dr. HIGGINS: I disagree with Mr. Duchochois on that point; for if an emulsion film was flowed with alkali and tannin, exposure and development would result in every way as desired, and in such case no soluble salts would be removed.

The meeting then adjourned.—*Anthony's Bulletin.*

To Correspondents.

W. W.—You will already have obtained the details you require regarding the rapid process from M. Boissonas' letter in our last. 2. We believe that the gilding of the edges of cards is always effected with gold leaf, how far pure we cannot state. So far as we know, bronze powders would not be available for such work. As we stated last week, we found no enclosure in your letter.

C. HOOD asks for information as to the most profitable method of disposing of 20,000 quarter-plate negatives, and as to the probable amount of silver to be obtained from them. The question is a new one, upon which we have, unfortunately, neither information nor experience. Can any of our readers supply suggestions? In the absence of data, we can only suggest removing the films by means of a hot solution of soda, and then ascertaining the amount of silver in a hundred for experiment. The whole question, it seems to us, must be determined by experiment.

A. (Notting Hill).—Your best plan will be to write to Mons. Ernest Laean, 21, Avenue de la Grande Armée, Paris, stating your wishes. He can probably give you the best information on the subject, or, failing that, his journal, the *Moniteur de la Photographie*, is the best journal in which to advertise your want.

A. MANDERS.—If you have a magic lantern you may use it to throw an image on a screen of canvas or paper, using the negative as a slide; or, failing that, the process is very simple without a lantern. Make a frame to fit your camera in place of ground glass. In this frame must be an aperture the size of the negative, in which the latter must be fixed. Place this so that the light from the sky passes through the negative and through the lens, and is received on a screen placed a sufficient number of feet behind the camera, moving the screen, and focussing the camera, until the image is sharp and of the proper size. The remainder of the window should be darkened so that the principal of the light, if not all, which enters the room shall be that passing through the negative. You will find the operation simple enough in fact, although it is not easy to describe very clearly in the limited space of an "Answer to Correspondents."

B. B. R.—The YEAR-BOOK will be ready in a few days, and will contain full information on both the subjects you name.

L.—It is difficult to say what is the best method of warming the dark-room. An open fire is dusty, as is also a coke stove. A charcoal stove is dangerous, and should not on any account be tried. The fumes of carbonic acid given off would soon prove fatal to life. A gas stove must have some method of carrying off the products of combustion. One of George's Calorigens is really the safest, cleanest, and most wholesome means of warmth you can use, and gas supplies the heat. The temperature of the room should not be below 50°, and should be as near to 60° as possible.

NOVICE.—We should prefer No 1, having found it excellent for the class of work you name.

J. B. BEST.—Various methods have been proposed for making collodion give a more powdery film, in many of which we have very little faith. It is best to begin with a suitable pyroxyline in which the powdery quality has been produced by weak acid and high temperature. Failing this, then ripeness in the collodion gives good results. The addition of water to a tough collodion will make it yield a powdery film; but this requires much care, as excess of water leads to reticulation and absolute rottenness of film. 2. We should certainly not add acetic acid to the bath, and for dry plates a good proportion of bromide in the collodion is of vital importance. The process you name is moderately good. But of all the bath processes, we think the coffee process is one of the simplest and best. The formula given by Mr. Whitehouse in our YEAR-BOOK for 1877 gives excellent results. The old collodio-albumen process is the most certain process we know, but the preparation of the plates is very tedious. Emulsion processes are, however, superseding bath processes.

Several correspondents in our next.

The Photographic News, January 10, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO. A GOOD MOUNTING MATERIAL—THE POISONOUS PROPERTIES OF BICHROMATE OF POTASH—GERMAN JOURNALS.

A Good Mounting Material.—A good mounting material is a blessing to photographers. Gum, glue, starch, rubber, dextrine, flour, shellac, and other materials too numerous to mention, have in turn served the photographer's needs, and solutions of them have various advantages. You do not always want the same kind of mounting material. If it is a thin delicate sheet to be mounted, no one would think of taking thick hot glue, nor when a stiff carbon impression is to be fixed is he likely to employ gum-water. There is, however, something else besides the cementing power of the material to be considered in selecting a substance for every-day use. It may dry too hard, or it may, on the other hand, have such a tendency to absorb water that print and mount part company as soon as they are put in a damp place. A pure gelatine or isinglass is a very good mounting material when dissolved in warm water, but it is hardly suited to photographs. In the first place, it is difficult not to apply too much of it, for the viscid solution clogs the brush; and in the second place, it becomes so hard and brittle that the mount, if it is not very stout, is sure to buckle. Bookbinders and others, for this reason, do not employ refined gelatine or the best glue in their work, but prefer a second-class material, known as town-made glue. This, they find, works up to a froth more readily, and the consequence is, while the solution in this form is more easy of application, there is less of it actually applied, and the consequence is, less chance of exudation when the application is finished. There cannot be anything more annoying to the picture-mounter than to find the material he employs exuding from the margin at the end of his work. This is frequently the case when gelatine in solution is used that is applied more in the form of a syrup than a froth. Some use a mixture of gum and glue, and this is to be recommended in the case of stubborn prints which want a good deal of cement upon them. In all cases where glue is employed, it is necessary, however, to have heat, and this some people object to; while another drawback is, that it buckles the prints if these do not happen to be mounted on thick board. The buckling may to some extent be avoided by the addition of sugar, three or five per cent. of the latter being generally sufficient. But where the mounting is to be done on paper or a thin mount, glue is hardly suitable, and starch or dextrine is to be preferred. One of the best receipts for a mounting material of this kind is one recently given in these columns by "Trywell," of Hawkhurst, which we have essayed with so much satisfaction, that it has been forthwith adopted in preference to any other. It is simple to prepare, and may be employed cold, a feature all the more to be noted, since it contains spirit, which would otherwise evaporate rather quickly. We quote "Trywell's" formula:—

Water	...	...	...	1 ounce
Methylated spirit	...	...	...	2 ounces
Dextrine	...	...	...	2 table spoonfulls

Mix the water and spirit, stir in the dextrine, making a smooth paste, and place the vessel you mix it in in hot water till a clear brown solution results. This solution, we can assure our readers, is a very good mounting material for photographs. The print lies smoothly and evenly without that tendency to buckle which most cements betray. Those who give this inexpensive material a trial will feel grateful to "Trywell" for making the receipt public.

The Poisonous Properties of Bichromate of Potash.—A complaint comes across the sea from America, that sufficient warning has not been given those who practise carbon printing of the deleterious nature of the bichromate of

potash solution with which we have to work. M. Duchochois read a paper at the American Institute, in which he put himself forward as a victim and sufferer of the effects of bichromate, and we can readily believe that the poisonous nature of the salt is in some cases of a most virulent character. M. Duchochois is wrong, however, in supposing that attention has not been drawn to the gravity of the subject, for not only in this country, but in America, has it been referred to, a volume by the Editor of this journal published by Messrs. Anthony & Co. having specially directed readers to the fact. Bichromate of potash solution works upon some systems more strongly than others, but in any case it cannot be without injury to those who are constantly employing the salt. Thus, although to wet one's figure with a solution daily for a few minutes may not harm, it is another matter altogether when a photographer or his assistant does nothing all day long but sensitize carbon tissue in a bichromate bath. To do this, with a stout constitution or a weak one, cannot be beneficial, to say the least of it. It is like collodionising plates. To breathe the ether fumes now and then, when you enter a dark room to coat a plate, may not be injurious; but to be an assistant confined all the morning, doing nothing else, may lead to serious consequences. We have seen this in one of the finest Paris studios—an assistant cooped up near the roof, whose duty from morning till afternoon had to be carried on in a hot cupboard full of ether and alcohol fumes, the only relief being when he momentarily opened the door to hand out or receive the slides. Even supposing the cupboard to have been as well ventilated as possible, the tainted atmosphere must necessarily have been bad to breathe day after day, and we took some consolation, we remember, in the fact that the assistant in question was a man of half caste, and we hoped, therefore, in a better condition to bear the hot close air around him. We cannot help thinking that bichromate solution, however harmless it may appear in some cases, can hardly be employed with immunity day after day without having some deleterious results. It may be argued that as bichromate of potash has been used for coating articles of food—to wit, the pea-sausage to which we adverted last week in these columns—it cannot be strictly considered poison. But the cases are widely different, as will be seen at a glance. In the first place, there is no need of the bichromate to penetrate the gelatine skin at all; the sausage, if first of all covered with a thick layer of gelatine, and then dried, before the application of the bichromate, might not come in contact with the latter at all; but even if it did, the food would be of a greasy repellent character, while at the same time it would lack that absorbent power which a living system represents. There would be no absorbing action constantly going on and carrying the poison into the system, which constitutes the main injury when we dip our fingers into a solution. So that, although bichromate liquids may not act as poison in trivial cases, there can be little doubt about the risk photographers run who systematically wet their fingers with the solution; and we owe our thanks to M. Duchochois for so vividly portraying the effects which may arise from disregarding ordinary means of precaution. No doubt when carbon tissue comes more generally into use we shall be able to purchase our material already sensitised, and thus obviate the danger altogether.

German Journals.—The new German journal, the *Deutsche Photographen Zeitung*, has just completed its first year, under the editorship of Herr K. Schwier, of Weimar. We are glad to make this announcement, since two of our German contemporaries, *Licht und Helios*, have long since disappeared. Being printed in Weimar, the headquarters of the *Zeitung* is practically in Mid-Germany, and therefore should be in a good position for circulation. There are now, we believe, two weekly photographic journals in Germany, but their columns are very small compared to the sister periodicals in this country.

NOTES ON THE APPLICATION OF LIGHT.

BY W. W. STODDART, F.C.S.*

No one can have made many delicate researches in chemical phenomena without noticing the very remarkable difference produced when light is present or when light is absent, or the changes that take place in the chemical reagents themselves when one portion is allowed to remain on an open shelf exposed to the influence of light, while the other portion is strictly kept all the time in a dark cupboard, and both in well-stoppered bottles. This is especially seen also when testing with these reagents. A noticeable difference may more easily be seen in the months of April and May, when a full proportion of the actinic rays are present.

It is possible that no ray of white light ever falls on any natural solid or liquid without setting its molecules in an intense state of vibration and producing a peculiar aptitude for change. I am not now alluding to silver salts, or other well-known photographic agents, whose sensibility to the rays of sunlight, the electric spark, or the combustion of magnesium is known, but ordinary inorganic and organic solids. The molecular changes that take place may be quite invisible to the unaided senses, but are none the less potent.

Mr. Lockyer's late observations on the compound nature of the elements in some degree bear out this idea. In a late number of the *Annales de Chimie Physique*, M. Chastaings says that the chemical action of the various rays on inorganic substances is dependent on the *refrangibility* of the ray—the blue and violet rays acting as *reducing* agents, while the less refrangible ones, such as red and yellow, cause *oxidation*. Professor Vogel, however, denies this, and says that reduction or oxidation depends solely on the nature of the object itself. Thus, hydrogen and chlorine unite instantaneously when exposed to the blue and ultra-violet rays, and this, he says, is analogous to oxidation, and alludes to the fact that plants decompose or reduce carbonic acid more rapidly with the red ones.

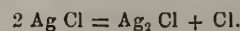
I must confess I cannot quite agree with the Professor, for I think that it is the light itself which has the peculiar power in effecting a molecular change in the object on which it impinges; but to better express my meaning the following experiment will suffice:—Nearly fill a glass tube with the freshly-ignited sulphides of the alkaline earths, and submit the tube to the various parts of the spectrum. The less refrangible rays will produce no appreciable effect; but no sooner is the sulphide placed under the influence of the more refrangible, or the blue and ultra violet rays, than the superficial molecules are placed in the most intense state of vibration, and on taking the tube into a dark-room a strongly-coloured phosphorescent light is emitted.

Most present are familiar with the autotype or chromogelatine process. The jelly kept in the dark is an ordinary soluble mixture, but when exposed for a short time to the more refrangible rays of light its nature invisibly changes: the high lights, as they are termed, become quite insoluble in warm water, while the middle tints become only partially insoluble, an insoluble compound being probably formed with reduced chromic acid.

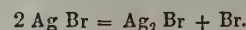
If we place a small quantity of ordinary table salt on two white glass-stoppered bottles, and put one of the bottles on a shelf in a light place, and the other in a dark cupboard, it will be found that in a few weeks the salt on the shelf and exposed to the light will become darkened and have a dirty appearance, while the other that has been kept in the dark has retained its former whiteness.

Pharmacists are familiar with the fact that when camphor and similar volatile solids are stored in transparent white bottles, they always crystallise on the side

of the bottle—that is, towards the light. When a *burette* that has contained a dilute solution of silver nitrate for the estimation of chlorides has been well washed out with distilled water, and laid aside in the stand, although so apparently completely clean, a very minute film of silver chloride is left on the glass tube, which gradually becomes visible by its change into a dark violet colour on exposure to daylight. A drop of the distilled water that remains after washing out of the *burette* will, on being tested, show that the molecules of metallic chloride have been changed into a subchloride and chlorine—



A similar reaction takes place with the bromide or iodide—



The molecular disturbance is rendered far more active if a gentle heat be applied.

If a piece of white silk be dipped into a solution of auric chloride, and, while moist, exposed to light, the silk will become greenish, then purple, while afterwards the metallic gold itself will be precipitated on the surface. An alcoholic solution of a vegetable substance is usually thought to be perfectly well preserved, and a most permanent preparation—indeed, the most stable of medicines. It is so if kept constantly in the dark, but in daylight a singular change will take place.

When the leaf of a biennial plant of *Hyoscyamus* is macerated in proof spirit and filtered, an extremely beautiful and well-marked spectrum is seen when viewed under a micro-spectroscope. Several well-marked absorption bands appear at B, D, E, and F. Even if kept in a well-stoppered bottle and exposed for a few months to ordinary daylight a molecular change takes place, although quite imperceptible to the unaided eye; but under the spectroscope the absorption bands are altered, and their number and characteristic position are seen no longer.

A still more remarkable instance of the powerful action of actinic light is shown when a few chips of common logwood are macerated in rectified spirit. When the alcoholic liquid is made with freshly-cut wood it has a yellow colour, and is wonderfully sensitive to ammonia, potassium, and other alkalies, and produces an exquisite blue with alumina. But when this liquid is kept in ordinary daylight for a few months a most extraordinary change is found to have taken place. The tincture is no longer sensitive to these reagents, nor will it form a blue compound with alumina. In the first instance the hematoxylin loses two atoms of hydrogen, and another body called “hematein” is formed, which readily unites with ammonia and the different bases. In the second instance the light has affected the hematoxylin in a way not hitherto perfectly explained, so that the actinic rays have not only produced a molecular, but a chemical change.

It is to this state of quiet and imperceptible action that many puzzling photographic failures are due, and I fully believe that were photographic reagents prepared and kept all the time in the dark, as carefully as sensitised paper, a strongly-marked difference would be found in the results. If, then, so great a difficulty is experienced in the wet processes, how much more may be expected with dry plates! I think it is the general opinion of all photographers that, for some unexplainable reason, if kept for some time without being used, the proper development of a dry plate is often a matter of great uncertainty.

Another very remarkable fact occurs when a perfectly colourless solution is intensely opaque to the chemical rays of light; for instance, a solution of the vegetable alkaloids or glucosides is perfectly opaque to photographically useful rays of light. If placed in front of a sensitized plate a layer of solution will as effectually stop all photographic action, even if exposed for a considerable period, and the expected photograph will sustain as complete a blank as if a thick plate of copper had interfered.

* Read before the Bristol and West of England Amateur Photographic Association

RECENT ADVANCES IN THE APPLICATIONS AND SCIENCE OF PHOTOGRAPHY.*

It is, perhaps, as a handmaid to science that photography gains its greatest lustre; for, though a science in itself, it is chiefly in connection with chemistry and physics that it obtains the fullest recognition. Artists in public affect to despise it; though in private it has become an invaluable aid to them; but scientists are always ready to acknowledge its utility, hence to science rather than to art it has to look for due acknowledgment of its claims. A quarter of a century ago photography was the nursing of such men of genius as Sir John Herschel, Becquerel, and Draper; and as phenomenon after phenomenon was discovered it attracted a large share of attention from the scientific world; but when the collodion process of Archer was announced and practically introduced, and it became open to the meanest intellect, it was deserted by our great thinkers, and as a science made but little progress till recently. A revival of the interest which once existed in its growth in this respect occurred some three or four years ago, when Dr. Vogel and Captain Waterhouse demonstrated that there are fields for exploration in it yet open to him who might wish to work. They showed that the yellow and green rays of light, which were ordinarily supposed to have no chemical action on the most sensitive silver compounds, could be utilized for obtaining photographic impressions, by staining the collodion film with different aniline dyes. Following their steps, Captain Abney has shown that not only all the visible radiations can make an impression on a simple silver compound, but that the dark rays of low refrangibility, the existence of which was previously known solely by their thermal effects, can be similarly effective when the simple compound is so prepared as to absorb these radiations. Here we have a possibility of extending our knowledge of spectrum analysis, as we shall presently show, and of solving problems which heretofore were impossible to grasp. Another advance in deciphering the work written by light has also been made, which sets at rest the notion that existed regarding the properties of the red and the blue rays of the solar spectrum. Draper had noticed and Herschel had confirmed the fact that the former had apparently the property of undoing the work which had been performed by the latter on the sensitive silver compound, iodide of silver—with which photographers are familiar—that is to say, that if a picture were taken with the blue rays, or with white light, and then were exposed to the action of pure red light, the work of the first-mentioned rays would be undone. Thus Claudet found that a red sun was photographed as a black object against a white sky, notwithstanding the sky itself intervened between his lens and the sun. This antagonism of the different components of light remained a mystery till quite recently, when Abney was able to show that the phenomenon was due to the oxidation of the compound, which had been altered by the blue or white light, such oxidation preventing the development of the photographic image. The outcome of this last solution may, perhaps, have important results, as we find that photographs in natural colours may be produced by this process of oxidation, and if it be only possible to render them permanent, the long sought after Eldorado will be reached.

Such is a brief outline of the progress made in the science of photography itself; but the applications of it to other branches of science are very numerous, though we can but recount some few. In solar physics we find it employed at the Physical Observatory of Meudon, near Paris, by Janssen, on a larger scale than has hitherto been attempted. In his photographs of the sun exhibited last year before the British Association, we find its surface shown of the enormous size of twelve inches for a diameter, with details of structure which have never before been seen by the eye. These magnificent records of our luminary are due to the skill of Janssen in modifying existing processes for his purpose, to perfection in the telescope employed, and to the minute fraction (1-3000th it is said) of a second during which the image is impressed. In these pictures we can trace the movement of the solar tornadoes in the photosphere by the obliteration of its definite structure, the very form of which would have remained open to doubt had visual observation alone been open. The telescope, it is true, when armed with a high power eyepiece, shows the mottled appearance of the solar surface, but the area in the field of view at one time is limited, owing to the necessary magnification, and we should never have learnt by it that these

solar storms were aught but the speculations of the theorist. In the photograph we are able to examine the surface as a whole, and to follow the track of the disturbances at our leisure. With the eye we integrate the solar atmospheric disturbances which occur in about the 1-10th of a second, in the photograph we have an integration for the 1-3000th of a second; visual observations are evidently, therefore, heavily handicapped compared with the photographic. For many years past we have had smaller photographs of the sun produced at Kew and Greenwich by the aid of De La Rue's photo-heliograph, with the view of obtaining an accurate register of the sizes and form of the solar spots, which wax and wane and wax again in number about every ten and a-half years. If famines and want of rainfall have anything to do with the absence of sun spots—and it seems more than probable from statistics that they have—it is principally to the photographs we must look to furnish the proof, and by them the theory must stand or fall. The establishment of a small observatory in India, where the sun is more frequently seen than it is in England, for the purpose of obtaining auxiliary photographs to those at home, is a step taken in the cause of science, and in all probability for the benefit of humanity.

The same form of instrument with which these smaller photographs are taken was employed by the English expeditions for recording the transit of Venus over the solar disc, and though the parallax obtained by photography has not proved to be as satisfactory as it was hoped, yet the fact of its employment at all marks the value set upon its aid by astronomers. In the recent total solar eclipse visible in America, it again obtained recognition as a recorder of facts in contradistinction to the eye, which is sometimes a recorder of foregone conclusions, and we find that no party of observers was complete without its camera and its photo-spectrograph.

Turning to another important and rapidly growing branch of physics, we must note its adaptation to spectrum analysis, in which Draper, Lockyer, Vogel, and Cornu, among others, have given it full employment as regards the sun, and Huggins as regards stellar work. During the last few years some of the most important advances in solar analysis have been made by its aid. Thus we find that Cornu has mapped the ultra violet region of the spectrum, and in that portion bordering on the region of visibility Lockyer has been able to lay down hundreds of those dark Fraunhofer lines which cross the spectrum and tell us of the constitution of the sun, while visually the number might be reckoned as units. Not that the absolute number is so important as the fact that some of the new ones mapped disclose the existence of elements in the solar atmosphere which before were more than doubtful. Again, too, in the spectrum photographs a leisurely study can be made of the relative thickness and darkness of these Fraunhofer lines, and the constitution of the upper and lower layers of the photosphere be approximately determined. It seems probable that even in our own day a change in their condition has occurred, since the relative blackness of certain lines has apparently altered. In future years the testimony of our photographs will be more valuable than the records of one hundred eye observations. We cannot do more than give a passing allusion to Lockyer's great discovery of the long and short bright line of the spectra of metallic vapours and their connection with the spectrum analysis of the sun, and of the possibility of reducing each of the spectra to one distinctive line, or monochromatic colour, in all of which photography has played an important part. By photographing the dark regions of the solar spectrum of low refrangibility, we may hope to know more regarding the state in which some of the metals exist in photosphere, since experiments made with the electric arc have shown that if they do so as compounds their spectra will partially lie in this part. Huggins, in his photographs of stellar spectra, shows records of the truth of the dictum that we have hot and cold stars planted in the heavens, and possibly they may tell us a good deal more than this as our familiarity with them increases and as our means of interpretation grow. To Francis Galton we are indebted for a totally novel application of photography to scientific research. By taking photographic portraits of our gaoi birds, and then building up a picture with the photographs of convicts imprisoned for the same class of offence, he is able to show us the type of face and head from which we may expect the commission of any particular crime. Or, again, by taking the photographs of a family, and giving a certain value to collateral branches, he is able to build up a typical family facio. The combination of these portraits, we may remark, is effected by

* Continued from page 4.

printing the camera pictures on the same paper for different lengths of time. Thus the son's portrait might have three minutes' exposure to light given to it; this camera picture would be withdrawn, and a paternal uncle's superposed for one minute, and so on, till the whole family had contributed to make the typical face. Some of the results obtained are immensely striking, and we doubt not that much more may be learnt by adopting this or some other similar method for the purpose. At Greenwich, and at other meteorological observatories, we have long had photography employed as the registrar of the slow variations indicated by various meteorological instruments, but to-day we find it put into requisition for the registration of quick oscillations. The vibrations made by the disc of the telephone, the movements of the pulse, the forms of beats—all of them are now recorded by it; and we might indicate other branches of science where the rapidity of the impressions made would be of immense value.

In our military services we have it employed as a measurer of the force of torpedoes, by registering the height and dimensions of the volume of water raised, or as a reconnoiterer from a balloon. At the siege of Paris we all recollect the pigeon post, and the use that was made of it for sending despatches and letters in miniature; but we shall be surprised if in a future war photography is not used more extensively than at present the public think possible. Our list might be lengthened out if space permitted; but we have, we think, shown sufficiently that photography progresses in itself and in its applications, that it is a scientific industry as well as a science, and that its future is not a contracted one, but universal in its character. Light must become the pen of the man of science, the pencil and colour-box of the artist, and the tool of the engraver.

ON EXTREME RAPIDITY BY THE USE OF THE WET COLLODION PROCESS.

BY CHARLES WALDACK.*

It was my privilege, two years ago, to receive a visit from Mr. Boissonnas, of Geneva (Switzerland), and to examine his album of pictures made by his rapid process. The pictures astonished me greatly. The evidence was there that they had been made by very short exposures, and I felt convinced at the time that Mr. Boissonnas had succeeded in modifying the wet collodion process so as to make it a great deal more rapid than when the various ordinary formulæ are used. A short time afterwards an intimate friend came into possession of the secret process, compounded collodion, bath, and developer, and invited me to witness a trial of the new chemicals. I went provided with collodion, bath, and developer, all freshly made. Tested against a set of chemicals which had been in use for some time, the advantage was decidedly in favour of the Boissonnas compounds; but when tried side by side against the newly mixed chemicals I had brought with me, the results were similar. 'Tis was a disappointment, for I had worked myself up to the point to believe that a great progress had been made, and that we had a new power in our hands. Subsequent experiments went to confirm the first, and the only conclusion I could come to was that the astonishing results obtained by Boissonnas were due, not to the extreme sensitiveness of the compounds used, but to very favorable conditions of light and clever management.

A closer examination of some of the Boissonnas specimens proved that most of the subjects, children, dogs, and cats, had been perched on a table or platform, so as to bring them closer to the skylight. The illumination had been managed, not with a view to effect, but to rapid action. The rule, expose for the shadows, and the lights will take care of themselves, had not been forgotten. High shadows require short exposures. Thin negatives are thus produced, which have to be brought up to printing density, hence the necessity for redeveloper and intensifiers. The result is a certain granularity of deposit, and, to some extent, an obliteration of half-tones. The Boissonnas prints are by no means fine

specimens of photography, but they are evidence of great rapidity of action.

Now, if your readers wish to know how the collodion, bath, and developer had been made, which proved equal in sensitiveness to those recommended by Boissonnas, I will give in a few lines the manner of compounding them. I must say beforehand, however, that I do not believe them to be more sensitive than many others which they have, or may have had, in use. Pure materials, and such there is no difficulty in getting at the present time, are the main thing. The substitution of one iodide or bromide for another (I speak of those generally in use), has very little influence on the result, if the collodion be used at the proper time. The ether should be pure, free from foreign smells, not ozonized; the alcohol free from essential oils. All our respectable stockdealers supply us with everything in the best condition. Do not rely on the country drug store.

Plain Collodion.

Alcohol...	...	$\frac{1}{4}$ litre (250 c.c.)	(10 ounces)
Pyroxyline*	...	(10 grammes)	(300 grains)
Shake and add			
Ether	...	$\frac{1}{2}$ litre (500 c.c.)	(20 ounces)

Shake until complete dissolution, and let settle.

Iodizing Solution.

Alcohol...	...	$\frac{1}{4}$ litre (250 c.c.)	(10 ounces)
Iodide of ammonium	...	(10 grammes)	(300 grains)
Bromide of ammonium	(4 "		(120 "

Filter. To three parts in volume of the plain collodion, add one part of the iodizing solution the day before using. In hot weather do not prepare more than you want to use in the next two days. The ripening process, if pushed too far, is detrimental to sensitiveness.

Silver Solution.

Fused or recrystallized nitrate of silver	...	...	90 grammes (3 ounces)
Distilled water	...	...	1 litre (36 "

Use as good water as you can get; distilled, or water from clean and pure ice.

Filter. Keep one-fourth of the solution apart, and to the rest add a couple of crystals of iodide of potassium dissolved in water. Shake and filter again in the light. If any organic matter should be present it will combine with the precipitated iodide. Throw in your filter about one gramme (30 grains) of nitrate of baryta. After filtration of the iodized part, add the one-fourth which has not been iodized, and acidify with one drop of C. P. nitric acid.

The nitrate of baryta is added for the purpose of preventing pinholes. How it acts I cannot explain; certain it is that it does have that effect.

The developing solution for rapid exposure should be strong, and should not contain more than the necessary quantity of acetic acid to obtain clear pictures. A seven or eight per cent. solution (2 to 30 ounces of water) will be found to allow of a shorter exposure than the ordinary three or four per cent. generally in use. Add two per cent. of the ordinary acetic acid (No. 8), and the same quantity of alcohol.

The collodion and developer can be mixed every few days. The bath, however, will, after a time, cease to give the best and most rapid results. When the developer begins to creep instead of flowing evenly over the plate, boil the bath down to one-half, and replenish with distilled water. A time will come, however, when the loss of sensitiveness will be such that a more radical remedy has to be made use of. The solution should be boiled down to dryness, and fused. The fused silver can then be used to make a new solution, which it will be useless to iodize, however. A good plan, which is used by some careful English workers, is to make use of two baths. The first one alone is used until the developing solution begins to creep; when this happens, the plate is

* *Mosaics*, 1879.

* The cotton I used was Poulence & Wittman's. That of Anthony's and Hance's or Peter Parry's, are fully up to the mark.

dipped for a half minute in a second and new bath. The second bath need not be stronger than five per cent., about 25 grains to the ounce.

A few remarks now about evaporating silver solutions and fusing. The evaporating dishes imported in this country are of poor quality and very liable to crack. The real Berlin dish is difficult to find. Never expose your evaporating dish to the direct flame of gas or coal oil. To use a sand-bath is a very tedious process. Procure a piece of wire gauze, and interpose it between the flame and bottom of the dish. Be very cautious when you use a new dish; heat very gradually. When it has been used some time it is tempered, and will stand the heat much better. Use a large dish for evaporating, and when the mass is very thick and solidifies on drying, put it in a smaller dish to fuse it. Evaporate without bringing the solution to a boiling-point. This is the safest plan. When fusing, cover the mass with a thin funnel, to prevent the projection of fine particles of silver all over the room.

PHOTOGRAPHIC ENGRAVING.

BY CAPT. J. WATERHOUSE, B.S.C.*

Electrotyping Methods.—In nearly all the electrotyping methods the printing plate is obtained by depositing copper on a gelatine relief obtained by the agency of light, or on a cast in plaster, gutta-percha, &c., taken from such a gelatine relief.

If a dry film of chromated gelatine on a suitable support be exposed to light under a photographic cliché, and then plunged into hot water, the parts acted on by light, being insoluble, will remain on the support in different degrees of relief according to the intensity of the light, while the unexposed parts will be washed away. An image in high relief formed of hard and insoluble gelatine will thus be obtained, from which a cast or electrotype in intaglio may be made.

If, however, instead of using hot water, the plate be plunged into cold water, the gelatine will be found to absorb water and swell up in the parts protected from the light, while in the parts acted on by the light it will only slightly absorb the water, and these parts will thus form hollows. The power of absorbing water will also be found to be in exact proportion to the degree of protection from light. In this case, an image in low relief is obtained, which may also be moulded from, or electrotyped.

Upon these two principles several processes of producing printing-plates both for copper-plate and letterpress printing have been founded with more or less success.

The first process of the kind was Paul Pretsch's "Photogalvanography," invented in 1854. He appears at first to have obtained his plates by coating a glass with gelatine and bichromate, exposing to light, and then washing away the soluble gelatine, and taking a mould of the resulting relief in gutta-percha, from which an electrotype was made in the usual manner.†

This process gave fair results both in line and half-tone, but, owing to the washing away of the soluble gelatine being effected on the side of the film exposed to light, the plates were defective, and required a good deal of touching up by skilled engravers, which vastly increased the expense of their production. The process failed as a commercial speculation.

Almost immediately afterwards, in 1855, Poitevin published methods of obtaining plates from the gelatine reliefs obtained by swelling the sensitive films in cold water. Plaster casts were either made from them, or the gelatine surface itself was metallized and electrotyped in the usual way.‡

This method produced tolerable results, though the prints were always somewhat coarse, owing to the fact that

swollen gelatine will not give the same sharpness as when dry.

Both these processes were more or less unsuitable for reproducing subjects in half-tone—Pretsch's because in the process of washing away the soluble gelatine the lighter half-tones were liable to be lost—Poitevin's because of the difficulty of keeping the swelling in proper relative proportion, owing to more absorbent parts of the film lying underneath less absorbent parts. Both processes also failed to give the necessary grain, without which the proper inking of the engraved plates could not be effected.

Various attempts were made to improve on these processes, unsuccessfully, until M. Placet showed that it was necessary to adopt in them the same principle of exposing on one side of the gelatine film and developing on the other, which, as we have seen, had previously been shown to be necessary for the preservation of the half-tones in the pigment-printing process, and for a similar reason.

M. Placet indicated several ingenious ways of obtaining his results.* They may, however, be briefly summed up as follows.

A film of chromated gelatine is exposed under a transmitted positive cliché, so that the light acts on the under side of the film; this is done either by covering the collodion side of the cliché itself with the sensitive coating, or by using a thin transparent sheet of transfer collodion or mica as a support for it. After exposure to light, the film is soaked in water, whereupon those parts which have been protected from the light swell up in proportion to the amount of the action of light upon them. By treating the mould in relief thus obtained with metallic solutions, an electrotype copy in copper may be produced, which can be printed from in the copper-plate press.

If a negative cliché is used, the unaltered gelatine must be dissolved, or a second electrotype must be made.

M. Placet also suggested the employment of a sensitive surface which would become soluble under the influence of light, such as a mixture of gelatine, or other colloid, with perchloride of iron and tartaric acid, as recommended by Poitevin for pigment-printing. In this case the solvent acting on the exposed side hollows out the image in the same way as an etching fluid does on copper, but with the advantage that each line has only the exact strength given to it by the intensity of the cliché; or the altered parts of the gelatine film may simply be swollen with cold water, producing an image in relief. In either case, a mould is taken from the gelatine and electrotyped, or copper may be deposited on the gelatine itself.

By his process M. Placet was able to obtain very perfect gradation of shade in the half-tones of his pictures, with a fine natural grain produced by some means which he did not divulge. He has lately, however, described a method of producing the grain, which consists in plunging the gelatine plate into a solution of bichromate of potash, and then treating it with a solution of protosulphate of iron containing acetic acid.‡ The principle he lays down is first to treat the gelatine with a solvent, and then with a solution of some substance that will tan or contract it.

Messrs. Fontaine, Avet, and Drivet have also proposed similar processes, in which they have partially overcome the difficulty of obtaining a proper grain by interposing between the cliché and the gelatine film a fine network or an impression of an engraved or roulette tint; but these artificial grains have a disagreeable effect, and the methods seem to have fallen into disuse, except for line-work and photo-typography, which will be described further on. Avet's process is, however, I believe, still in use for producing the maps of the Italian Survey.

(To be continued.)

* Continued from page 588, vol. xxii.

† See Journal of the Photographic Society of London, vol. iii., p. 58.

‡ See Traité de l'Impression Photographique sans Sels d'Argent, p. 49.

* See Davanne "Les Progres de la Photographie," p. 195.

† See "Bulletin de la Soc. Franc. de Photographie," vol. xxiii., p. 130.

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THE FORTHCOMING DRY-PLATE COMPETITION.

THE time is near at hand when intending competitors for the prize of £50 offered by Mr. Paget for the best dry plate process should be making progress with their preparations. Two finished negatives, which, it is needless to say, should be good ones—as good, at least, as the process will produce—together with three prepared unexposed plates, and a description of the process, must be delivered to the Committee of Award before the end of March. Hence it is quite time that intending competitors should begin to give attention to the subject.

At no former period in the history of photography were dry plate processes so much in the ascendant as at the present time. At no previous exhibition of the Photographic Society were so many dry plate pictures exhibited, and never before was there any approach to such prevalent excellence amongst dry plate pictures. But it is somewhat doubtful whether the forms of excellence exhibited come exactly within the conditions demanded in competing for Mr. Paget's prize. The primary aim in these conditions is not difficult to ascertain. A good tourist's process is manifestly aimed at. The standard of final excellence must not be inferior to that attained by wet collodion. But, apart from that, good keeping qualities before and after exposure seem to be most prominent amongst the indispensable qualities. The prepared plates must keep at least four months before exposure, without deterioration; and they must keep three months after exposure and before development in any climate. These conditions essentially point to plates for travellers. The characteristics of recent dry plate developments have been noticeable in extreme sensitiveness and delicacy of result, rather than in keeping qualities. The boast has been, that the modern dry plates were as good for studio work as were wet plates; and in such a case keeping qualities are scarcely thought of. Amongst the old dry processes there are many which are simple in preparation, fairly sensitive, and excellent in result, but few in which the keeping qualities are beyond question. The tannin process, which had a transient vogue, essentially failed in this respect. The plate, if kept after exposure, gradually lost the latent image produced by exposure. The Fothergill process had a similar fault. A plate which had been kept some time required a longer exposure; and if kept after exposure, required prolonged and energetic development. The morphia process, which was very simple, and gave good results, had practically no keeping qualities. One process alone, the oldest and best of the old processes, had, in combination with many other excellent characteristics, good keeping qualities as well: as the collodio-albumen process scarcely ever failed in any desir-

able quality. In its normal state of working it was not quick, but with hot development it could be made so. It gave fine harmonious pictures, and with a final wash of gallic acid, its keeping qualities seemed almost indefinite; plates in many cases having been kept without any perceptible deterioration for upwards of twelve months.

Some of the modern emulsion processes were found to fail in keeping qualities, and of some others we as yet know little of their capacity in this direction. But we glean from the experience of Mr. Cooper, as stated in his recent paper, that the emulsion process which produced his very fine pictures at the last Exhibition possesses keeping qualities of a rare order. Five months in some cases before exposure, and three months in some cases after exposure and before development, leave little to be desired in this direction. As it is to be hoped that this process may be found amongst the competing methods, it is not desirable to speak more of it at present, beyond referring to it as indicating desirable possibilities amongst emulsion processes.

The committee entrusted with the examination of the competing processes will have no light task in working the various processes; keeping, exposing, and developing the competing plates, &c. There is one of the conditions which can, we think, have scarcely received full consideration when it was published. The plates are to keep well for a given number of months, *in any climate!* Will some member or members of the committee travel with the plates from China to Peru, from the Poles to the Equator? Or will they send the plates travelling to be submitted to this ordeal? Will they be submitted to the wet period of India, the simooms of Arabia? Will they be sent on an Arctic expedition, and made to "cross the Line" to acquire ripeness, like Madeira wine? We imagine not. This phrase "in any climate" has manifestly been allowed to creep into the conditions without thought. The aim, probably, is to imply that the plates must possess sufficient robustness of constitution to travel reasonably without hurt, not requiring, like a patient with bronchitis, to be immersed in a temperature not exceeding nor falling below 65° Fahr.heit.

Such an examination as the committee contemplate demands time, manifestly; and we can scarcely hope for the publication of a decision much within twelve months, if, indeed, it does not exceed that time. For ready reference, and as a reminder to possible competitors, we here repeat the general conditions of the competition:—

"1. The description of each process accepted in competition shall contain sufficiently accurate details to enable any ordinarily skilful photographer to produce results thereby, equal to those obtainable by the wet collodion process.

"2. Sensitive films made by the process shall remain without perceptible change for not less than four months after preparation, and must keep satisfactory three months in any climate between exposure and development. Should more processes than one fulfil the stated conditions, the preference will be given to the most sensitive and easily prepared.

"3. Each competitor, or his representative, shall have the option and be willing, if required, to prepare any special chemicals or appliances, and with such, or others prepared according to his formulae, make, expose, and develop some negatives by his process, in the presence of the appointed judges.

"4. A description of the processes shall be sent to the Secretary of an Award Committee, to be appointed by the Council of the Photographic Society of Great Britain (competitors not being eligible to act thereon), on or before the 31st March, 1879, accompanied with three 8½ by 6½ inches unexposed plates, and two or more finished negatives. Should the negatives not be equal in the opinion of the judges to those produced by the wet collodion process, they, together with the unexposed films, and descriptions of the means by

which they have been produced, will be returned on or before the last day of May, 1879. Competitors may send the negatives, &c., accompanied with their names and addresses enclosed in a sealed envelope, and marked outside with a cipher and an address, which will be returned unopened, should the Award Committee consider the specimen negatives below the requisite standard of excellence. One or more of the negatives by the successful process shall be retained for exhibition until after the next meeting of the Society.

"5. The decision of the Committee appointed by the Council of the Photographic Society shall be accepted by the competitors as final, and the receipt of the prize shall be deemed equivalent to an agreement that the process may afterwards be published unconditionally, practised by any one. Should the conditions not be entirely realised, the prize may be either awarded or retained for competition during the following year, at the discretion of the judges. After the award the description of the prize and other processes may be published under the direction of the judges, unless a wish be expressed to the contrary at the time of sending in a process for competition, should it not prove the successful one."

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

GELATINE of every kind contains organic salts of calcium, which in the process of incineration are converted into carbonate; the best kinds also contain gypsum. When gelatine is digested in cold water, the calcium salts are dissolved out, as can be proved by testing with ammonium oxalate; sulphuric acid will also always be found in the solution, for the addition of barium chloride gives a perceptible precipitate. The presence of these salts of lime is unavoidable, and as in the chromate processes they produce neither harm nor benefit, it is immaterial, and no criterion of the goodness of the gelatine. The sulphate is also always present in greater or less quantity, but as its presence is equally of no consequence, it is useless, and only an unnecessary trouble to look for it.

The only reliable means of separating alum from gelatine is that recommended by Woodbury and Swan. After softening the gelatine by soaking, it is dissolved in warm water; to every 200 to 250 grammes of gelatine is then added the white of an egg diluted with twice its volume of water, and a few drops of ammonia, the whole being previously well shaken. The mass is then weakly acidulated with dilute acetic acid, and boiled up; by means of the albumen the alum, with a small quantity of gelatine, is precipitated, and on filtering the solution the remaining gelatine comes off perfectly pure. According to the author, however, it is unnecessary to take all this trouble, as, at any rate, the finer kinds of commercial gelatine are never adulterated with alum.

Returning to the consideration of the table, the author observes that the amount of water contained in air-dried gelatine depends principally on the thickness of the cakes and the hygrometric condition of the atmosphere. As shown by the first column of the table, its determination is of no practical value, as the amount of water that any particular kind of gelatine contains bears no relation to its goodness.

Of so much the greater importance is the third column, which gives the "parts by weight of water taken up by one part by weight of gelatine." Although it cannot be said that every sort of gelatine which possesses only a moderate power of absorbing water is bad, it can at any rate not be denied that one possessing a large absorbing power is good. Every gelatine which is able to absorb more than seven times its weight of water at 15° C. will

be found to be reliable for a photographic purpose. But it must not be taken for granted that this is a universal test, for there are excellent collotype gelatines that absorb only five or six times their weight of water. As an auxiliary test, however, the absorbing power of gelatine must not be underrated. The author's experience is that a gelatine rich in gluten, and able to absorb a large quantity of water, gives more easily developable chromate films for carbon pictures and photo-electrotype plates than one which can absorb only a small quantity of water. As an element in the selection of gelatine, this property must therefore not be neglected.

The prime factor, however, in the determination of the value of any particular kind of gelatine is the test of its carrying power. As may be seen in the fourth and fifth columns of the table, the carrying power has a close relation to the goodness of the gelatine. This is shown very clearly in the gelatines numbered in the table one to four, which are of the same manufacture, but of different qualities and prices; as the goodness of the gelatine decreases, so also its ability to bear a weight without tearing diminishes. Just as clear is the evidence given in the table by Nos. 14 and Nos. 18 to 24; these are manifestly inferior kinds, and can only bear weights that are in a remarkable degree smaller than those which Nos. 5 to 13 can stand, the latter being in other respects of excellent quality. Generally, therefore, we may say the greater the carrying power, the better the gelatine. From the nature of the process by which this carrying power is determined, as above explained, it will be understood that the relative values can only be roughly ascertained. According to the experience of the author the mean error in those values may be taken as 10 per cent.

As has been already mentioned, a gelatine which is well adapted for the collotype process must be able to resist great mechanical pressure, or, which is the same thing, must possess great carrying power. On account of their ability to withstand pressure, Nos. 10 and 11 are specially preferred for collotyping; the table shows that these gelatines can bear a great weight without tearing. The other photographic gelatines are also, according to the table, well able to resist pressure, whereas Nos. 14 and Nos. 18 to 24 can bear a weight of scarcely 450 grammes, and are quite useless for photographic purposes. Generally, a photographic gelatine should be able to bear at least 600 grammes, and one for the collotype process about 700 grammes.

As regards the last column in the table, a jelly consisting of a 10 per cent. solution of gelatine should not melt at a lower temperature than 30° C.; only inferior qualities would do this.

From all these considerations, therefore, the author concludes that a gelatine, to be suitable for photography, must fulfil the following conditions:—It must be colourless, or only faintly yellow; after soaking in water, it must dissolve easily and completely when heated; allowed to lie in water twenty-four hours at a temperature of 15° C., it must not break up; calcined, it should not yield more than 3 per cent., or at the farthest 4 per cent. of ash; lastly, when proved by the method above described, it must be able to bear a weight of at least 600 grammes without tearing. If a gelatine fails in complying with any of these conditions it is not advisable to employ it. When the gelatine is to be used in the carbon process, or in photo-electrotyping, the greatest stress should be laid on its power to absorb water, but if it be required for collotyping, the greatest importance should be attached to its carrying power. For the latter purpose, indeed, if two gelatines show equal ability to resist pressure, the one which swells up least in water should be selected. It should also be noticed that one gelatine will dry with a glossy, and another with a dull surface; the latter is to be preferred for collotype, the former can be corrected by adding spirits of wine.

(To be continued.)

* Continued from page 2.

COLLODIO-BROMIDE EMULSION PLATES.

BY WILLIAM BROOKS.

It is now very seldom that we hear of dry plates being made by the old system of collodion and nitrate of silver bath, as collodion emulsions are now well to the front, and at the present time almost every photographer takes an interest in dry plates and the general cry has been how to prepare a reliable dry plate, so that the preparation is not difficult, and the results certain. It is with this object in view that I offer the results of my last year's experiments to photographers, both amateur and professional, which I will give in detail. Many make a sad mess of dry plate work. The first question asked is, What exposure shall I give? Well, now, to give the time of the exposure with absolute certainty is a thing almost impossible—the golden rule is to make a few experiments. I will mention one instance. A gentleman amateur asked me to tell him how long to expose a plate for a house, stating its situation, light, &c. I told him what I thought it would require, and he took it for granted that was the proper time for everything, no matter its situation or how the light was. He exposed about three dozen plates. Some were woodland scenes, and, as a natural result, he blamed everybody and everything except himself; and I have known several professional photographers to act in the same way. I always recommend that experience should be gained by exposing and developing a few plates on a few test subjects, and, as a golden rule, give plenty of exposure, which can be remedied in developing, whereas with a plate that has been under-exposed it is very difficult to obtain a passable result, although an expert may at times get a better result than a novice.

The Glass Plates.—Always use the best glass for small sizes, say up to 12 by 10. I use extra thick polished flatted crown. I find that some of this description now in the market is polished on one side only, which can easily be detected by passing the thumb-nail over its surface. The unpolished side feels pimply, which is very unsuitable for the film. A great many specks I have attributed to these pimples in the glass. On examining them under a microscope they appear to have a crater-like appearance, which acts as a receptacle for foreign matter, which becomes filled up and is detrimental to success, especially if the plate is kept for a few months. Patent plate is preferred by some. I object to it on account of its surface being so absorptive, and give the preference to the former. Great care must be taken to insure clean plates. I always soak them for a short time in dilute nitric or sulphuric acid—whichever is at hand—about one ounce to a pint of water. I never use washing soda or any alkali, as it attacks the surface of the plate, unless they are plates which have been varnished, and it is then almost indispensable. Should such be the case, only allow them to remain just long enough to have the desired effect—that is, to remove the varnished film. Remove them, and place them in clean water and stream singly under the tap, both sides, rubbing with the palm of the hand. After this treatment very little need be feared. Instead of polishing the plates, I prefer to use a substratum of albumen, as the labour is far less, and a better result is obtained. I always keep a good stock of prepared albumen on hand, which I prepare by the well-known formula of Mr. W. Ackland, which will keep for a year or two in good condition; it was published many years since.

To prepare the stock albumen I break each egg separately in a cup, and separate the yolk carefully, taking care to see that each egg is perfectly fresh and free from smell before adding to the whites of the other eggs already broken, as one bad one will spoil the whole batch. New-laid eggs are best on the score of freshness, but shop eggs I have found to answer the purpose very well. After the requisite quantity of albumen has been obtained, according to the quantity one requires to make, to every eight fluid

ounces of albumen mix together one ounce of water and twenty-four drops of glacial acetic acid, and add, pouring it into the albumen in a fine stream, and stirring constantly with a glass rod for one or two minutes. On no account is it to be beaten or whisked up, or the resulting preparation will have a milky appearance. It is then allowed to rest for one hour or more, and then strained through a piece of coarse muslin or cheese cloth. To this strained albumen is to be added one drachm of the strongest liquid ammonia, after which it is to be put up in bottles and tightly corked. I find it best to bottle it off in small bottles of about one ounce, or even half ounce, for when a bottle is once opened it requires to be used up. In this way any quantity can be made; it is then always at hand, and will keep for a very long time. It is the best system of preparing albumen that I know; I have used it ever since its publication. It is not only used as a substratum, but further on it will be seen that it plays a most important part in developing the plate. For use as a substratum use

Prepared stock albumen	...	...	1 ounce
Water	...	...	1 pint

Filter in the ordinary way through paper. Have all the plates ready in a dish of clean water, take one on a pneumatic holder kept for the express purpose (I find the red rubber ones the best, as they do not appear to get hard), stream under the tap, drain slightly, then flow over it from a clean glass measure a small quantity of the dilute albumen, which will drive the water before it; allow this to run off the plate, turn the plate round and pour the albumen solution at the end the first lot was poured off at, and return to the measure this time; the plate can now be set up on end to dry, or in a plate-rack, allowing the bottom corner only to rest on blotting or filtering paper. On a hot summer's day, this system of cleaning plates is not at all objectionable, and can be done more effectually than by polishing with the leather, &c. When the plates are thoroughly dry they can be edged with a solution of india-rubber dissolved in benzole, about six grains to the ounce, which is easily done by cutting a common camel's-hair brush to a stump, and tying on one side of it a strip of glass about a quarter of an inch wide, or a little less, allowing it to project down below the hairs about a quarter of an inch, which will act as a guide, and give an even edging all round without the slightest trouble. The plates can now be stored away in plate-boxes from the damp putting the prepared side all one way. They will keep good any length of time, or can be used at once.

In respect to the emulsion to be used, any good washed emulsion that will give a clean image can be used; it matters little whether it has been organified or not; it seems to make but very little difference. A simple bromized emulsion gives the best results; a bromo-iodized does not work so well unless the plates are prepared and used at once. I do not give here any formula for the emulsion, as so many forms have been published whose name is legion, and it will not serve any purpose to add to their number. Before I proceed to coat the plates, I prepare the preservative in quantity according to the number and size of the plates I intend to prepare.

Bitter ale	...	...	1 ounce
Pyrogallie acid	...	...	1 grain

Mild or sweet ale will not do, as it contains too much saccharine matter, which gives a very uneven coating, and is more readily affected by atmospheric changes. Sufficient of this preservative is poured out in a porcelain dish about half-an-inch deep; the plate is then taken on a pneumatic holder, and coated with emulsion in the usual way, and allowed to set, so that the last drop at the corner where the emulsion was poured off at is almost solid, and, without any intermediate washing, it is put at once in the preservative. Washing the plate must not be done on any account, or the desired result is not obtained, as I find it highly essential that the preservative must penetrate the

film, and not merely act as a varnish on its surface. If the plate has been washed, the film is so charged with the water that the preservative cannot enter, and it can only be accomplished by putting the plate in the preservative at once, so that as the solvents contained in the emulsion (ether and alcohol) leave the film the preservative enters and perfectly saturates it. I find also another great advantage in working in this way, and that is, one never need fear being troubled with drying marks; the plate can be taken up and examined without leaving any mark in the finished plates; not so if the plate has been washed. Although I mention the fact, it must not be supposed for a moment that I recommend the examination of the plates while drying. As a rule, the plates should not be moved until dry, and after removal they should be well dried before storing away, which can easily be accomplished by means of a flat hot water tin, sufficiently hot just to drive off the last traces of moisture. If plate-boxes are used for storing the plates, do not by any means use india-rubber cushions or pads; it does not matter how pure the rubber may be, for wherever the plate is in contact with it, an insensitive mark is produced. I generally put a strip of cardboard at the bottom of the box; I find it answers every purpose; also a piece at the top. It is best to have the boxes made of well seasoned wood. If the plates are packed up in packets, I find it convenient to pack them up in half dozens, using pieces of cardboard about two inches long, bent like an angle iron thus Γ , which are very easily and rapidly made by cutting a groove in a piece of hard wood with a saw. A piece of cardboard known as three-sheet board is cut to the required length, and about a quarter of an inch wide or a little more: one edge is inserted, and the part that projects is just turned over with the finger and rubbed down with some hard substance. The handle of a penknife answers the purpose admirably. The widest part lays over the end of the plate, and the narrowest over the edge of the plate. I have used this system for many years, and I find it answers admirably in every respect. The plates are then tied over with string, and wrapped up in one sheet of orange-coloured paper, one sheet of pitch paper (which can be bought at the shops where paper-hangings are sold, at one shilling per piece of twelve yards), and then in a final wrapper of brown paper, and pasted down. Plates packed in this way I have never found to take any harm on the score of packing.

The plates do not require backing unless the emulsion is used too thin. In preparing the plates it is best to have a good body in the emulsion, and, at the same time, it must not be so thick as to cause an uneven coarse film. I have kept plates prepared under this formula four or five months before exposure, and about the same time between exposure and development, and have developed them without either speck or stain.

The exposure of the plates depends upon circumstances, viz., subject, light, time of year, lens, stop, &c.; exposing a plate or so on a test subject is the best experience.

(To be continued.)

CHEAP HOME-MADE POCKET CAMERA, ETC.

BY RICHARD PARR.

IN the course of my experiments (described in some of your YEAR-BOOKS), I felt the want of a really portable "kit," that I could carry about with me without inconvenience; and as, after trying several, I found I could not buy what I wanted I went to work and made it as follows:—

I had an unusually good Darlot miniature portrait lens 1 inch aperture, $2\frac{1}{4}$ inch back focus (equivalent focus about $2\frac{3}{4}$ inch), which I found to be very sharp over a circle two inches in diameter, and which, when used as the objective to a "sciopticon," enlarged the said circles fairly up to 12 inches,

which, for comparative purposes, was sufficient for my wants; and to this I built my "kit" thus. I laid in a stock of sheet brass, exactly 1-32nd inch thick, a little brass wire the same size, soft solder, and tools. To make the camera, I cut a strip of brass to form a tube $2\frac{1}{8}$ th inch inside diameter by $2\frac{1}{2}$ inch long (the lens projecting a little more than $\frac{1}{4}$ inch inside the camera), bent this into shape, and brazed it down the seam—soldering will do as well if done neatly. Fitted it on to a mandril of hard wood, and turned both ends quite true in the lathe; cut (with shears) a piece to fit the end for front. Cut out of this with a fret saw a hole truly central to fit lens mount, soldered it in its place, and the lens collar on to it in its place; soldered a ring of brass wire 1-16th inch thick round the outside of the camera at the back edge, to strengthen it. Got a piece of round brass 5-8th inch thick, bored a hole endwise in it, tapped (or screwed) it to fit a piece of 3-8th inch brass gas-tube, and, first putting lens in its place to see that focussing-screw came in a handy position, I soldered on bottom of camera, near the front, to form connection with stand, and polished it to my liking. Next I made, as before, a length of tube such size as when finished to fit stiffly inside camera, and putting it on a mandril in lathe, cut it into 3-16th inch lengths. Next made focussing-slide by getting a piece of brass plate exactly 3-32 inch thick, $2\frac{1}{4}$ inch by 2 inches, rounded the corners nicely, and soldered round one side, flush with the edge, a rim 3-16th inch deep. In the tray thus formed I fitted a piece of the 1-32 inch brass sheet, and through each corner put a screw tapped into the thick plate, and long enough to allow a piece of ground glass to lie between the plates. Next got the centre, marked a circle 2 inches diameter, and cut it out with a fret saw through both plates, and round the hole outside the thick plate soldered one of the 3-16th inch rings of tube, which, by slipping into camera, holds slide in its place, and polish off.

For the double dark slide I made two sides for each thus. Take two pieces $2\frac{3}{4}$ inch by $2\frac{3}{4}$ inch, and solder them together side by side, round the two longest edges and one of the short edges putting a piece of the 1-32 inch wire between them where you solder, to keep them apart just the thickness of the plate, and leave a space between them in which shall slide a plate of the same brass to form a shutter. Find the centre, and mark a circle 2 inches diameter, which cut out with fret saw as before, and solder one of the rings of tubing round it. Now to one of the "sides," solder on the opposite side to that where the ring is, and flush with the edge, a rim all round it $\frac{1}{4}$ inch deep; inside this, and leaving an equal space all round, solder another rim only 1-8th inch deep, and just large enough to take in a $2\frac{1}{4}$ by 2 inch plate (the size I am using). Now take the other "side" and solder on it, true with the edges, a rim $\frac{1}{4}$ inch deep, that will just fit easily all ways between the two rims, on the other side when placed together. Polish off clean, and place the two sides face to face in their proper position, and clamp them, and make a joint like a snuff-box hinge exactly up the centre line between them by soldering on a "joint" made with hollow "joint wire," 1-8 inch diameter, and wire to fit it. I prefer to make the hinge in three lengths, soldering on to one "side" a short piece at each end, and then fit a piece nicely in between, and solder it to the edge of the opposite side, first putting in the wire. Now, on opposite edge to the hinge, solder a brass spring catch, to fit without shake. Inside this slide and between the plates I use a blackened plate (cut a little less than the glass plates) with a small spring on the back to keep them well home in the slides; when well made and fitted, these slides are very compact, quite light-tight, and do not hold damp. The stand will require castings, for which I made patterns. The foundation is a clamp large enough to take in $1\frac{1}{2}$ inches, such as is used to screw domestic mincing-machines on to the edge of the table, with the screw, $\frac{3}{8}$ inch brass gas thread, and long enough to close clamp to $\frac{3}{4}$ inch, has a large milled head. On one side of the strengthening rib of clamp, and near the screw end, is cast a boss, to which screws a right-

angled bracket 1 inch long and wide in each leaf by $\frac{1}{4}$ inch thick; to this is screwed, hack to hack, another exactly the same; and to this last, back to back, another, with one leaf the same, and the other a boss, with a hole through it to let a piece of $\frac{3}{8}$ inch brass gas-pipe slide and turn in it. This boss is sawn through, and has an ear on each side or wing, which, by being pinched with a screw through the ears, closes the whole and fixes the pipe at any point. The end of this pipe is screwed to fit the socket on the bottom of camera.

The screws are all "capstan-headed," and turned by a small steel punch, which fits the holes in their heads. They are $\frac{3}{8}$ -inch thick, screwed gas-thread, and slip through one leaf of the brackets, and screw into the one under it. Each bracket turns on its screw, and, by this means, and the sliding pipe (4 inches long) give a universal adjustment, and the clamp will screw on a door gate, chair, or window in any position (I have frequently used it from a railway carriage window), and, if desired, the clamp can be unscrewed, and the brackets made to screw on the head of an ordinary tripod.

My intention was to make the brackets fit the top of an ordinary walking-stick fishing-rod, by making a top to slip in it, and fit such top with three small reels, with pinching screws, and on these reels have a few yards of copper wire with a kind of small tent peg at the end, so that by pegging these down and tightening the reels I could fix it anywhere, but I have not found it necessary so far.

The instantaneous shutter is made thus:—A brass tube ring to fit lens tube is soldered on the centre of a plate $1\frac{1}{2}$ by $1\frac{1}{2}$ -inch, with a flange turned down on the longest two sides $\frac{3}{8}$ -inch deep: the centre cut out with fret saw. Through the flanges at top and bottom are bored holes, and a shaft, $\frac{1}{2}$ inch or more thick, fitted in each, each shaft having a thicker portion projecting $\frac{3}{4}$ -inch on right hand side looking from camera, and having a milled head. To the top shaft is fitted and soldered the shutter (by bending it over), which has a piece of silk velvet (black) on its under side, stuck on with chromated gelatine cement, to make it shut well and exclude all light. The top shaft projects $\frac{3}{4}$ -inch on the left hand, and is fitted with a boss soldered on with a hole through it at right angles to shaft, and a set screw in the end going into the hole. A similar boss is soldered to the left hand side flange $1\frac{1}{2}$ -inch below top shaft, and a piece of india-rubber band threaded through the holes and tightened by the set screws, so that when shutter is opened the rubber wraps round top shaft and closes shutter when released quicker or slower according to its tension. For all ordinary exposures this is quick enough, but it is not so for my gelatine plates for good actinic light, so I added the following:—On top shaft, $\frac{3}{8}$ -inch inside the milled head, solder a piece of brass wire projecting half inch towards camera at right angles to shutter when closed, and curving upwards slightly. On bottom shaft solder a similar piece $\frac{3}{8}$ -inch long, with a loop on end. In this loop fasten a length of same wire by another loop like the links of a chain. Let this length of wire, or link, have a loop on top to slip on to projecting arm of top shaft, and its length be such that when bottom arm is perpendicular, it shall rest without pressure on top arm. Now, if all is right, a quick turn of bottom milled head towards camera—less than one quarter revolution—opens shutter, and when it is a little above the horizontal line, link slips off top arm and it closes. This is the quickest acting shutter I know of that is not automatic. As a matter of course, any size can be made in the same way according to lens, &c., it is intended to use.

I do not anticipate that many of our brethren are used to handling all the tools I am, but, as I am self-taught, and find it easy to dabble a bit in most of the arts and some of the sciences, I know there will be some who can, if they will; and if not, I trust my description is plain enough to be put into the hands of an ordinary workman with some hope of success, while, if it has any merit, it is that it is original, and has answered my purpose.

Correspondence.

CADETT'S PATENT SHUTTER—CRACKED NEGATIVE FILMS.

DEAR SIR,—In connection with Mr. W. Barry's very excellent modification—or, rather, improved method—of working the Cadett shutter, I would further suggest the desirability of reversing the angle of the pins or wires supporting the velvet disk, thus causing it to act silently and without raising dust, as otherwise would be the case by such a fan flapping up and down immediately in front of the exposed plate. It was only in this particular I preferred Cowan's "electric;" but now that it has been clearly shown how that admirable and "sweet" movement can be accomplished by "pneumatic" power, I consider the advantages decidedly in favour of the latter. One other modification I would also suggest, viz, instead of the top hole and wire arrangement to keep open the lid while focussing, just allow the ball to trail on the floor, and press on it with the foot, leaving the hands free to focus *ad libitum*. This plan will be found as efficient as it is simple, and dispenses with a deal of fine work requiring extreme caution to prevent light entering the front of the camera through the broad holes. Should this description not appear clear and sufficiently practical to you or any of your readers, I shall be most happy to furnish a drawing or drawings showing the actual working of these proposed modifications.

Cracked Negative Films—I discovered quite by accident one day, whilst preparing my negatives for retouching, that "there is nothing like rosin" for effectually and perfectly removing (as if by magic) the hair-like honeycomb cracks which occur so often at this season of the year in negatives coated with certain samples of varnish. Just dip the finger-end into a little of the impalpably fine powder, rub lightly over the cracks, and, Eureka! they are gone.—Very faithfully yours, VINCENT HATCH.

Huddersfield, January 1st, 1879.

PHOTOGRAPHY BY MEANS OF OXALATE OF IRON.

SIR,—I fail to see what it matters to Captain Abney whether I write in the *Times* or not. The question at issue is, who produced the first photograph by oxalate of iron? And I re-assert that it was Dr. Phipson who did so in 1860, and that his process was published in 1861. Captain Abney confesses that he is ignorant of that publication, and yet he makes bold to assert that Professor Draper in America, in 1840 or 1843, or thereabouts (the exact date does not appear to be forthcoming), did something similar!

I happen to have been in Dr. Phipson's laboratory at the time that the first photograph in oxalate of iron was obtained, and I distinctly remember his showing me a capsule covered with green crystals of ferric oxalate, which, being exposed to the solar rays (one-half of the capsule being protected from the light for the sake of comparison), blackened like chloride of silver, and quite as rapidly. Shortly after this his process was published.

Just before writing my first letter on this subject I was shown the portrait produced on this occasion, and it was as perfect to-day, after a lapse of eighteen years, as it was the day of its production.

There is a great difference between the use of oxalate of iron as a photometer, and its use as a photographic agent for obtaining pictures.

A little later, in 1863, Dr. Phipson made known a new method of measuring the chemical action of daylight by means of molybdic acid—a most simple and accurate process of volumetric analysis—but he would never have

thought of obtaining pictures by the same process. Very probably Sir John Herschel was acquainted with the sensitive nature of ferric oxalate; but, much as he has done for photography, Sir John never published a process for obtaining a photographic picture by means of oxalate of iron. In Dr. Phipson's photograph the image was in oxide of iron; in that of Dr. Reynolds it was in silver deposited on the oxalic image; in Mr. Willis's ingenious process it is in platinum deposited on the same.

In conclusion, allow me to observe that the volume of Professor Draper's memoir referring to oxalate of iron as "an excellent photographic substance," quoted by Captain Abney, was only published a few months ago, and that, to establish any claim to priority, such a quotation is of no value whatever. In matters of science it is customary to quote original papers only, and the date of publication. I have too much respect for Captain Abney's opinion in these matters to allow this oversight of his to pass unnoticed.—I am, sir, your obedient servant,
HISTORICUS.
London, Jan. 4th, 1879.

THE LUXOGRAPH TESTIMONIAL.

DEAR SIR,—Business is our motto, not controversy. The very liberal offer of Mr. Faulkner is a misstatement, for his offer was for the complete apparatus as patented, and the £15 would not nearly cover the actual cost of production.

We are glad of this opportunity to confirm the statement of Mr. Gregson that Mr. Faulkner did express his enthusiastic and eulogistic opinion about the Luxograph, or, as Mr. Gregson so aptly put it, "he (Mr. Faulkner) expressed his admiration, and that in no unmistakable terms, either"; so much so as to induce Mr. Gregson and Signor Lombardi to become purchasers.—Yours truly,
36, Strand, W.C., January 2nd. ALDER AND CLARKE.

PHOTOGRAPHIC CONSERVATISM.

SIR,—It has been fully impressed upon my mind for some time past that photographers are as a class far too conservative in their ideas and practices, even where their own interests are most deeply concerned.

A convincing proof of the truth of this may, I think, be found in the fact that although so much has been written of late in praise of emulsion photography, and of the advantages which may be secured by using dry plates in the studio for ordinary portraiture, how few there are to be found who have availed themselves of this new power.

I know from past experience, both personal and relative, that there is a deep-seated prejudice existing in the minds of professional photographers against the introduction of dry plates for portraits in the studio, so contrary, say they, to long-continued usage—such an entire change in the method of working. But what illogical conservatism does this appear when we consider how very much more widely the field of operations may be extended by their adoption!

I firmly believe that the time is not very far distant when the present system of taking negatives by the wet process will be entirely superseded by the dry, and I can easily imagine that the former will one day occupy a place in our memory analogous to that of the old tinder-box, by means of which we used in times of yore to obtain our light, and the vessel which now contains our silver solution will be thrust aside into lumberdom, and be hereafter shown to our successors as curiosities of the elementary period. But, after all, I am not one who would treat such a good old servant as the nitrate bath has undoubtedly been with ignominy and shame; it has been a much-abused, and even more often ill-used friend, frequently worked beyond its power of endurance, and when the last straw has been piled on, and fairly broken it down, how often have we heard the remark, from its merciless oppressor, "Why, what on earth is the matter with my bath? I am sure I have done nothing to it." Well might the reply

have been given, in gasping tones: "Nothing—nothing—nothing; therefore it is that I can do nothing more for you."

Let us, then, during its few remaining days treat the old bath with respect, and when the time of its dissolution shall have come, taking care to obtain all its little remaining siller first, bury it decently with full photographic honours.

WILLIAM COBB.

Woolwich.

THE PRIZE INSTANTANEOUS SEASCAPES.

SIR,—Pity a poor medallist! The jury at the late Photographic Exhibition at Pall Mall East have inflicted upon me a medal. Not that it is any novelty for me to receive such a distinction, but in this case Col. Wortley says I ought not to receive it, and "Is he not an honorable man?" So you will see I am extremely unhappy. Had I only have been content to produce "nocturnes" in black and white, or "arrangements" of sky, water, and moonshine, as perpetrated by my gallant rival, history sheweth that I should not have been troubled with the above mentioned distinction.

My opponent is certainly powerful: "he can call up spirits from the vasty deep," although they do not always seem to come. He is continually invoking the aid of the London Photographic Society. Does he wish the members of the Council who acted as jurors to acknowledge their incapacity as judges? or does he wish that in matters of *seascapes* the award be left to the tender mercies of Col. Stuart Wortley, this redoubtable son of Mars to be at once President, Council, and Dictator? This gentleman, as Napoleon said of our Peninsular heroes, "does not know when he is beaten." I would, however, recommend for his guidance in future (whether he be holding an argument or making photographs) the maxim, "*Rien n'est beau que le vrai*," (There is nothing so lovely as truth).—Yours truly, PAYNE JENNINGS.

[As this correspondence can no longer tend to edification it must close here.—ED.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The first meeting of this Society for the present year took place on Thursday, January 2nd, in the large room of the Society of Arts, Adelphi, EDWIN COCKING, Vice-President, in the chair.

The Hon. Sec. (H. Garrett Cocking) read the minutes of the annual meeting, which were confirmed.

The evening, as on previous nights, was devoted to a lantern exhibition, when to a crowded assembly a large number of Mr. F. York's views in Paris and the Paris Exhibition were exhibited by Mr. York, Jun., Mr. McCall reading explanatory notes respecting the same. Some slides produced by Messrs. Payne Jennings and Mr. M. Ayres were also exhibited.

Votes of thanks having been passed to Mr. F. York, Mr. York, Jun., and Mr. McCall, it was then announced that at the next meeting, in February, Mr. T. Hasard would read a paper on "Gelatin Plates in the Studio," and Mr. W. Willis, Jun., would give a demonstration of his new Platinum Process, and the proceedings terminated.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

The ordinary monthly meeting of this Society was held on Monday, the 6th inst. (the correct day, New Year's Day, being inconvenient), at the usual place of meeting, the Museum, Queen's Road,—MR. F. DAVEY in the chair.

The minutes having been read and confirmed, Mr. H. T. Stevens was unanimously elected a member of the Council in the room of Mr. Holt, resigned.

In the absence of the President, Mr. W. W. STODDART, the Hon. Secretary, then read a most interesting and valuable paper by that gentleman, entitled "Notes on the Action of Light," (see page 14), which was listened to with much pleasure.

Mr. H. A. H. DANIEL remarked that the paper bore out a remark or two to which expression had been given by the Presi-

dent on a former occasion, and which he knew was the result of a rather strong belief held by that gentleman.

Mr. E. BRIGHTMAN thought that Mr. Stoddart was a little wrong in assuming that the change which possibly took place in chemicals by exposure to light was necessarily detrimental to photography; for instance, in the case of the nitrate bath it was the reverse.

Mr. T. DAVEY thought that where operators constantly got uniformly good results when working with such chemicals the idea was to a great extent negatived.

Mr. BRIGHTMAN stated that some time since he had tried a few experiments, and his experience was that the light had not had a detrimental effect on the chemicals photographically.

Mr. DANIEL observed that whatever the opinions were, it formed a subject in which it would be very well worth making some careful experiments, and the results of which would be interesting.

Mr. BRIGHTMAN proposed, and Mr. DANIEL seconded, a cordial vote of thanks to the President for his interesting paper. The latter gentleman, in doing so, said all must feel that Mr. Stoddart did not prepare a paper for them without a great deal of trouble, in consequence of his engagements being so very numerous, and therefore he knew the resolution would be most heartily carried.

Mr. DANIEL moved the following resolution, which was put to the meeting and carried unanimously:—"That this Association desires to express its regret at Mr. J. Traill Taylor having relinquished the editorship of the *British Journal of Photography*, and sincerely wishes him every happiness and prosperity in the future."

After the introduction by Mr. Davey, of a short discussion on the subject of nitrate bath-holders, which was continued for a short time, the meeting was adjourned.

Talk in the Studio.

TESTIMONIAL TO MR. TAYLOR.—A goodly assemblage of photographers dined together at the Café Royale, last Saturday evening, under the presidency of Mr. Glaisher, to bid farewell to Mr. J. T. Taylor, and to present to him a token of good-will in the shape of a handsome gold chronometer, and a purse of gold, which were handed in an appropriate speech by the chairman, and duly acknowledged. Various other speeches filled up a pleasant evening. The vice-chairs were filled by Mr. Walter Bird and Mr. A. L. Henderson.

LARGE PHOTOGRAPHS.—At a recent meeting of the Berlin Association for the Promotion of Photography, among other specimens of photography exhibited, were some remarkable landscape pictures by Herr Holtermann, of Sydney, Australia. These are more especially distinguished for their size; they are mounted on an endless band of paper strengthened with linen, nearly 100 feet long. Two colossal panoramas of Sydney and Melbourne have been each made from about a dozen sheets, 18 by 20 inches, very skillfully joined; the separate parts harmonize very completely in drawing, tone, and depth. The last on the list was a picture which, as could be easily seen, had been printed from a single negative, and its size, 150 by 93 centimetres, showed it to be quite an uncommon photographic feat.

STABBING A PHOTOGRAPHER.—At the Thames Police Court Capoo Basso, an Italian seaman, was brought before Mr. Saunders charged with unlawfully and maliciously cutting and wounding John Cass, a photographer, of 1, Wellelose Square, St. George's. Late on Saturday night the prosecutor was standing at the door of 1, Breezes Hill, Shadwell, talking to a young woman, when the prisoner came deliberately up to him, and, without uttering a word, struck him a sharp blow on the neck just below one of his ears, and then ran off at full speed. The prosecutor was not at first aware he had been stabbed, but, feeling a stinging pain, he put his hand to the place, and on withdrawing it found it covered with blood. He and his nephew, Andrew Gough, ran after the prisoner, and his nephew captured him in Canon Street Road, and gave him into custody. At Leman Street Station the prisoner was searched, and a pocket knife was found upon him the blade of which had marks of fresh blood upon it. A divisional surgeon of police was immediately sent for, who dressed the wound on the prosecutor's neck. The evidence having been interpreted to the prisoner by a fellow-countryman, he said he was drunk on Saturday night, and got knocked about by some persons; but he had no recollection of stabbing the prosecutor. In answer to the magistrate

the witness said the prisoner ran too swiftly and straight to be intoxicated. Mr. Saunders committed him for trial.

AN INSOLUBLE CEMENT.—A very valuable cement has been discovered by Mr. A. C. Fox, of which details are published in *Dingler's Polytechnisches Journal*. It consists of a chromium preparation and isinglass, and forms a solid cement, which is not only insoluble in hot and cold water, but even in steam, while neither acids nor alkalis have any action upon it. The chromium preparation and the isinglass or gelatine do not come into contact until the moment the cement is desired, and when applied to adhesive envelopes, for which the author holds it to be especially adapted, the one material is put on the envelope covered by the flap (and therefore not touched by the tongue), while the isinglass, dissolved in acetic acid, is applied under the flap. The chromium preparation is made by dissolving crystallized chromic acid in water. You take: crystallized chromic acid, 2.5 grammes; water, 15 grammes; ammonia, 15 grammes. To this solution about 10 drops of sulphuric acid are added, and finally 30 grammes of sulphate of ammonia and 4 grammes of fine white paper. In the case of envelopes, this is applied to that portion lying under the flap, while a solution prepared by dissolving isinglass in dilute acetic acid (1 part acid to 7 parts water) is applied to the flap of the envelope. The latter is moistened, and then is pressed down upon the chromic preparation, when the two unite, forming, as we have said, a firm and insoluble cement.

To Correspondents.

SILVER.—We do not know of any special house in Paris to which we can recommend you for goods. But in asking details of anything previously mentioned in the News, you should make specific reference, as we cannot tell from an indefinite allusion to what you refer. 2. We have published all details of Mr. Willis's platinum process which have been made public. For any further details application should be made to Mr. Willis, or the Albion Albumenizing Company, who some time ago were advertised as agents.

B. R. S.—The convex surface given to some portraits is produced by means of a press made for the purpose. The mode of producing the glazed or enamelled surface we have often described. A piece of plate glass is thoroughly well cleaned, then coated with a tough plain collodion. When dry, it is coated with gelatine. Upon this the print is placed face downward, and when dry removed from the glass, bringing away gelatine and collodion, and so acquiring the glazed surface desired. We cannot in this column enter into full details.

R. M.—Your printing bath has doubtless become too weak for use. The mottled poor print of which you complain indicates this. You should remember that every piece of albumenized paper floated on the solution abstracts silver from the bath, hence it requires refreshing with stronger solution to make good the deficiency in silver as well as in quantity.

YOUNG ANATEUR.—Your question, "Is it possible to take portraits in an ordinary sitting room?" is rather indefinite, inasmuch as everything depends upon the size and position of the windows. As a rule, it is not possible to take good portraits so; if it were, there would be no necessity to build special studios; but we have seen good portrait negatives produced in a sitting room with large bay-window. In fine weather good portraits may be secured in the open air.

W. J. ANCKORN.—We shall be much pleased to see one of the specimens to which you refer, and to receive details for our readers.

B. G.—The terms "strong" and "weak" are too indefinite except when used by experienced people speaking to experienced people. An experienced photographer knows, for instance, that in speaking of a printing bath, one of 20 grains to the ounce is weak; whilst one containing more than 50 grains to the ounce is strong; whilst a negative bath would be weak at 25 grains and strong at 40 grains. It is wise at all times to be definite. For your purpose a printing bath of from 40 to 50 grains per ounce will answer well.

A STUDENT.—The subscription to the Photographic Society of Great Britain is one guinea annually, and one guinea entrance fee. To the South London Society the subscription is half a guinea annually. To secure admission into either, you must be proposed by a member, and you will then be duly submitted to the ballot, and doubtless elected.

YOUNGSTER.—Your transparency arrived broken; but there is sufficient to show the fault of which you complain. The faultiness is due partly to over-exposure, but more to over-development. Remember that a transparency requires development different from that required by a negative, much shorter application of the developer being needed. You will get rid of the grey tone by toning with a neutral solution of chloride of gold.

SIGNOR LOMBARDI and several other correspondents, arriving late, are compelled to stand over until next week.

The Photographic News, January 17, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AT THE STAFF COLLEGE, SANDHURST.—THE LIQUEFIER OF OXYGEN—HOW TO TELL GOOD GELATINE FROM BAD.

Photography at the Staff College, Sandhurst.—Instruction in photography is becoming quite a feature in the technical education of staff officers. At Chatham, as our readers know very well, there has been for many years past a school for the instruction of officers and non-commissioned officers of the Royal Engineers in camera work and printing, the late instructor being Captain Abney, R.E., F.R.S., while the present one is Lieutenant Darwin, honorary secretary of the Photographic Society of Great Britain. Photography is one of the many arts which Engineers are called upon to practise with an army in the field, in the same way as they undertake surveying, telegraphy, lithography, &c., and it forms part of their ordinary duties; but in the case of officers in the Staff College the matter is different. The Staff College is for the purpose of training army officers, to fit them to take up staff appointments, which carry extra pay, besides giving ambitious young soldiers more prominence than they otherwise enjoy in their regiments. If a lieutenant or captain desires staff employment, he must go through a two years' course of study at Sandhurst College to qualify himself, and to get into the College it is necessary to pass among the first in a competitive examination. Thus it is no easy matter to secure a place on the staff. At the College the curriculum includes ordinary subjects, and extra subjects; in the former the students must qualify in order to pass out, in the latter they pass for honours or for special mention. Geology, telegraphy, and photography are special subjects, and of all, it is photography, apparently, that is the favourite. The Professor of Chemistry at Sandhurst College, Dr. E. Atkinson, F.C.S., is at the same time instructor of photography, and he finds his students so alive to the theory and practice of the art, that he has of necessity to bring before them all modifications and improvements in the dry and wet processes as they arise. The number of students who take up photography has of late much increased, and in the list which has just appeared of qualified staff officers, a large number have made themselves familiar with the camera during their sojourn at Sandhurst. Thus, to quote from the official list, we have Lieutenant Watson, 1st Dragoon Guards, "very good in telegraphy, photography;" Captain Fox, R.A., "very good in photography;" Captain Bell, V.C., R.E. (an Ashantee officer), "special mention in photography;" Captain Paterson, 16th Foot, "very good in photography;" Lieutenant Morgan, R.M., "good in photography;" Lieutenant Carey, 98th Foot, "good in photography;" and Captain Miles, 101st Fusiliers, "good in telegraphy and photography." Seven officers, therefore, who have passed for staff appointments this year, are qualified photographers, and capable of affording aid to a general in the field by reconnoitring with the camera, or illustrating his reports with photographs. It would be well if officers of the navy were similarly instructed; but we believe that so far the Royal Naval College at Greenwich has taken no steps to secure for their students any special instruction of the same kind.

The Liquefier of Oxygen.—Our readers will be glad to learn that M. Raoul Pictet, the liquefier of oxygen, who for some months past has been in a critical state, is now restored to health. M. Pictet, whose arduous researches, it may be remembered, were crowned with success about twelve months ago, suffered very severely from his work, and both brain and eye-sight were materially impaired. Not only were the experiments of a very dangerous character, involving, as they did, the exertion of enormous pressure, together with a very low temperature—for it is

only under these conditions that the gas can be liquefied—but the strain upon the mind of the investigator, who knew that others were upon his track, was for a time exceedingly great. M. Cailletet, of Paris, who at the same time, or immediately afterwards, completed the task by liquefying hydrogen and nitrogen, was also prostrated by his labours, so that there cannot be a doubt as to the hard work that was involved in these investigations. M. Raoul Pictet, as we have said, is now restored to perfect health, and will be in a position to enjoy the honours recently bestowed upon him. Besides the medal from our Royal Society, to which we have already referred in these columns, M. Pictet has had conferred upon him the honorary degree of doctor, by the University of Geneva—his native town—while the French Government, not to be behindhand, has made him a Chevalier of the Legion of Honour.

How to tell Good Gelatine from Bad.—Dr. J. M. Eder, whose scientific researches into the question of developers will still be remembered by our readers, is now adding to our obligations by publishing some results upon an investigation of gelatine. If there is a material more than any other among a photographer's requisites of which he knows comparatively little, it is gelatine, and it is this fact more than any other, we are convinced, which has hitherto stood in the way of the general adoption of carbon printing. Chemists are unable to tell us much about the material, and the consequence is, we have to rely pretty much upon what manufacturers choose to supply us with. It stands to reason that bone-gelatine must differ materially from skin-gelatine, while the product of one animal may not be the same as that from another. Some gelatines—the inferior ones—dissolve at a low temperature, and others, again, set with extreme difficulty. "It should be observed," says Dr. Eder, "that good gelatine, when dissolved, not only colours water very slightly, but gives an almost colourless jelly." Dr. Eder suggests two practical ways of ascertaining the quality of gelatine, which our readers would do well to bear in mind. The first is—although it may not hold good throughout—to see how much water the material is capable of absorbing, the more water taken up the better being the gelatine. To find out this, a piece of gelatine should be accurately weighed, and then permitted to soak for twenty-four hours in water at 15° Centigrade. The examination of a series of samples in this way will soon teach something about them. Another test is to find out the weight necessary to crush a gelatine jelly. Thus if you have half-a-dozen samples to examine, solutions are in the first place prepared, five grammes of gelatine being dissolved in forty-five cubic centimetres of water. Half-a-dozen beakers, or glass vessels of precisely the same diameter, are obtained, and the solutions placed therein to set at a temperature of 15° C. All gelatines should set at this temperature; if they do not, says Dr. Eder, they may be put on one side as unfit for photographic use. When set, there is lowered upon each jelly a little apparatus consisting of a piece of tin shaped like a watch glass, to the centre of which a wire is attached. The convex face touches the gelatine, and when it is weighted sufficiently it breaks through. At the upper end of the wire is a funnel, and to weight the apparatus small shot is dropped into the funnel. The weight of the apparatus should, of course, be in all cases the same, and this equality is soon brought about by adding shot to make up weight. The jelly which proves to be the firmest may be regarded as the best gelatine. An arrangement for steadying the wire is necessary, and this may be effected by covering the mouth of the beaker with a metal plate having an orifice through which the wire passes. The moulded metal plate touching the gelatine need not be more than 1.15 centimetres in diameter, while such is the toughness of the gelatine in some cases, that three pounds of shot are occasionally necessary before the apparatus tears the film. The

the stronger the gelatine, we need hardly say, the better it is. The better kinds of gelatine are all found to dissolve pretty well at the same temperature, but in the case of gelatine of inferior quality, this dissolves in water at a very low temperature.

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

ACCORDING to what has been stated, a Nelson's gelatine, which is especially recommended for collotypes, is not so well adapted for the purpose as most of the others. The fact is remarkable, but the author is unwilling to believe that his method of testing is in fault; on the contrary, he is strongly of opinion that this gelatine is inferior for collotyping purposes to many of the German and French gelatines enumerated in the table. To prove this assertion he submitted two collotype plates, one prepared with Nelson's gelatine, the other with a French gelatine (No. 10), to excessive pressure by repeated pulls in a printing press; the French gelatine was still sound when that of Nelson was completely crushed.

The secret of success in the collotype process, as in that of chromate photography generally, lies in the proper selection of a good gelatine. Nevertheless, nowhere is less care taken than at this stage, and the natural consequence is not long in making its appearance. Before employing gelatine for photographic purposes it is of prime importance to test it thoroughly; by so doing a whole heap of failures will be avoided.

One question still remains to be answered: Are gelatines rich in gluten or those rich in chondrin the best? Which of these is best adapted for collotyping, and which for carbon printing? To ascertain the amount of chondrin contained in a specimen of gelatine the author tested it with alum. For this purpose it is necessary to have a solution of a standard degree of concentration—10 per cent.—for if it be more highly concentrated nearly every kind of gelatine will set, in consequence of a certain amount of chondrin which is always present, whereas if it be more largely diluted the reaction will fail to appear. Of all kinds of gelatine those manufactured by Nelson are the richest in chondrin. In a tolerably dilute even strongly-heated solution of Nelson's gelatine both alum and chrome-alum produce an immediate precipitate. As regards the proportion of chondrin contained in them, Nos. 10 and 11 come nearest to those of Nelson, while the other kinds may be reckoned amongst those rich in gluten. The difference is best observed when the tests are undertaken simultaneously.

Chondrinous and glutinous gelatines do not behave alike in chromate photography. If plates be prepared in precisely the same way with a gelatine of each kind, and exposed under a negative, the one containing the larger amount of chondrin will become insoluble in a manifestly shorter time than the other. Glutinous gelatines develop with greater facility in hot water; but chondrinous gelatines become insoluble more rapidly. The author considers the gelatines that are rich in chondrin to be especially adapted for collotype; they are made more completely insoluble by the action of chromium oxide than those which are rich in gluten. It must be understood, however, that the latter may become equally insoluble under a longer exposure. He is also of opinion that chondrin produces prints of greater brilliancy, and with sharper contrasts. Gelatines which he proved to contain a larger amount of chondrin are excellent kinds for collotyping; those which are rich in gluten are better adapted for carbon printing. It should also be noticed that Nelson's gelatine No. 1 is not sufficiently soluble for the carbon process, for which purpose French gelatines are to be

preferred. For the collotype process, however, it should not be forgotten that the gelatine must be capable of withstanding a high degree of mechanical pressure—this is the first condition; that it should be rich in chondrin is only of secondary importance.

In corroboration of this opinion the author cites the testimony of one of the most celebrated workers with the collotype process in Germany, who, in a private communication, informs him that for the preparation of his gelatine he always uses the refuse of calves' heads. Now, it is well known that the members of all young animals which are still in process of development are rich in chondrin. This, however, is contrary to the opinion of Husnik, who states in his work "*Gesammgebiet des Lichtdrucks*," page 57, that the skins and sinews of fully formed animals make better gelatine for collotyping than those of young ones.

Boiling for a long time continuously renders gelatine quite useless, more especially for the collotype process. It has consistency, and consequently its carrying power, as may be easily seen, by submitting it to the test for this purpose above described.

The author has not been able to discover an accurate method of analysing gelatine quantitatively for chondrin; he gives, therefore, the reaction with alum as an approximate determination. By adding chrome-alum we increase the carrying power of gelatine in the same proportion as its hardness; but letting it stand for half an hour is sufficient to equalize this difference. Gelatine mixed with chrome-alum is able to bear only one-fourth of the weight that it could previously support; the number thus formed, however, stands in no kind of relation to the amount of chondrin contained in the gelatine, but depends rather on its carrying power.

PHOTOGRAPHIC ENGRAVING.

BY CAPT. J. WATERHOUSE, B.S.C.*

Geymet's Method.—The fourth method, that of electrotyping from a gelatine relief obtained by the pigment-printing process, is somewhat similar in principle to Placet's process, but as there are important differences, and the process appears likely to prove of some utility, it may well be treated separately.

According to M. Geymet, who has very fully described the process and all the manipulations of preparing and electrotyping the reliefs in his "*Gravure Heliographique*," it was the invention of M. Audra, a French amateur.

Pigmented gelatine tissue is sensitised and exposed to light exactly in the manner described for the Autotype process. It is transferred to a smooth glass or a polished copper plate, developed in warm water, and when dry is metallised and electrotyped. If the subject is one in line or dot only, the above operations are sufficient; but if the subject is a photograph from nature, or any other with gradation of shade, it is necessary to obtain a grain, and this M. Geymet does by taking a copperplate with its surface grained or engraved with a ruled or roulette tint, inking it up in the ordinary way, and covering it with a coating of transfer collodion. When dry the film of collodion is stripped off the plate, and carries with it the impression of the grain. This film is then placed between the cliché and the sensitive gelatine film, and serves to break up the shadows in the more transparent parts of the cliché.

A similar process has been used at the Depot de la Guerre, in Belgium, for the reproduction of maps.*

Last year, whilst making some experiments on this process, I succeeded in obtaining the necessary grain by chemical means which produce a finer and less artificial effect, and I have also made a few other modifications in the process, which may be worth recording at length.

* Continued from p. 17.

* See Maes and Hannot *Traité de Topographie*, &c., p. 330.

* Continued from page 19.

A piece of the ordinary autotype tissue is sensitized in a 5 per cent. solution of bichromate of potash. When dry, it is exposed to light under a reversed negative, and then transferred in cold water to the surface of a well polished copper plate, and squeezed down into close contact with it. In order to prevent subsequent adherence to the newly deposited copper in the electrotyping bath, the copper plate is silvered by rubbing it with a little of the following solution mixed with tripoli.

Nitrate of silver	...	...	1 part
Cyanide of potassium	...	...	10 parts
Water	...	...	100 "

The gelatine tissue attached to the copper plate is allowed to dry, and then developed in warm water in the usual manner, great care being taken not to loosen the lines, an accident which is very liable to happen, though the preliminary drying of the tissue before developing tends to prevent it.

When the image is quite clear from all soluble gelatine, the plate is well drained and plunged into a bath containing—

Tannin	...	...	5 parts
Strong spirits-of-wine	...	...	100 "

This at once removes all moisture from the gelatine relief, hardens it, and gives it a fine grain, coarser in the shadows than in the lights. The plate remains a few minutes in this bath till the action is complete in the deepest shadows; the tannin is then washed off with a little spirits-of-wine, and the plate is allowed to dry.

The gelatine relief has now to be prepared for receiving the electrotpe deposit. A band of copper having been soldered to it, the back of the plate is coated with Brunswick black, to prevent deposition of the copper upon it. When the backing is dry, the margins of the picture are cleaned with a little of the silvering solution. The gelatine surface then receives a very slight coating of wax dissolved in turpentine, which is well polished off, and is rubbed over with fine plumbago or silver-bronze powder to render the surface conducting. The plate is then ready to be placed in the depositing bath.

Any good electrotyping arrangement may be used, but I prefer a Smee's battery with a separate depositing trough containing a solution of 10 parts each of sulphate of copper and sulphuric acid in 100 parts of water.

A plate of copper, to serve as an anode, and connected with the silver plate of the battery, is laid horizontally about an inch above the bottom of the depositing trough, which should be large enough to allow the plate bearing the gelatine relief to be slipped under the anode. The relief-plate is connected with the zinc plates of the battery, and, when everything else is ready, the circuit is completed by slipping it into the depositing trough under the anode.

By laying the plates horizontally in this manner the deposit is more even, and the gelatine film seems to be more readily covered with copper.

When the deposit of copper is of sufficient thickness it is separated from the matrix, and only requires a gentle oil-rubbing to be fit for printing.

The plates obtained by this method show very good half-tone, with an almost imperceptible grain, giving the effect of a fine chalk-drawing.

I have lately tried to obtain the images upon the copper by the double transfer process, making use of a flexible temporary support, consisting of paper coated with india-rubber, as first proposed by Swan, which can easily be removed with benzole after the transfer of the gelatine image to the copper. The grain is given to the image by soaking it in water after the removal of the india-rubber paper, and then applying the solution of tannin in alcohol. This plan seems likely to be successful; if so, it will greatly simplify the operations, and enable engraved plates to be obtained from any ordinary negative without the trouble of reversing.

By electrotyping direct from the gelatine relief, the results are always rather heavier and coarser than they should be, because, although hardened and insoluble, the gelatine relief can always absorb a little of the copper solution in the depositing trough, and consequently the image swells and loses sharpness.

The strong tanning given to the gelatine film, and the preliminary coating of wax before metallising the surface, obviate this defect to a considerable extent; but it may perhaps be better to obtain a matrix in lead by pressure from the gelatine relief, and then to obtain the printing plate by electrotyping twice from the lead matrix. This is a more round-about and expensive method, but is likely to yield finer results, and has been adopted by Woodbury and Rousselon in the processes next to be considered.

The process is simple, and if it could be successfully worked out it might be usefully employed in this country in reproducing shaded maps and for other miscellaneous purposes. It has the very great advantage over photocolotype that the plates can be corrected, if necessary, and can be printed in any numbers in the ordinary copper-plate press without risk of breakage or damage to the printing surface.

COLLODIO-BROMIDE EMULSION PLATES.

BY WILLIAM BROOKS.*

Development.—After the plate has been exposed, take it on a pneumatic holder, and flow over it equal parts of alcohol and water. I must here add a caution not to use the alcohol too strong, or it will attack the film unevenly and cause mottling, especially in the high lights, as I am sure, from past experience, this is one of the causes. It is not seen so much in the half-tone, and scarcely at all in masses of foliage, or where the subject is well broken up. If mottling does occur, it is mostly at the thick end of the plate. I do not know if this corresponds with the experience of other workers. If the alcohol is used without diluting (say at a s.g. of .825) the mottled markings are very large, and as the alcohol is diluted with water they become smaller and smaller till they disappear altogether. I generally allow it to soak well into the film for about two minutes, of the strength mentioned above (half water and half alcohol). Methylated spirit answers every purpose, providing that it is free from gum (if contaminated with gum, it turns milky on the addition of water). If a quantity of plates are to be developed, I prefer to immerse each plate in a tray containing the spirit, as it is then done effectually. The plate is then taken and allowed to soak in a dish of clean water, and rocked about until the water flows evenly over its surface. Previous to applying the developer, flood the plate with the following—

Stock albumen (as above)...	...	1 part
Water	...	4 parts

Allow this to soak well into the film; well rock the plate to ensure even action; not less than one minute must be allowed for this part of the operation. The plate is then slightly drained, and the alkaline developer applied, made from the following stock solutions—

P.—Pyrogallie acid (best)	...	96 grains
Absolute alcohol	...	1 ounce
A.—Sat. sol. carb. ammonia	...	4 ounces
Bromide of potassium	...	2 drachms
Water	...	8 ounces

A few drops of solution P for 9 by 7 plate (say five drops), and one ounce of solution A, are mixed in a perfectly clean measure, and at once poured over the plate; as soon as it is covered it must be rocked vigorously for a few seconds, so as to make it blend with the albumen on the plate, and if the plate has been properly exposed,

* Continued from page 21.

it will at once make its appearance, gradually acquiring intensity.

After the developer has been on for some little time, should it apparently cease in its action, drain it off, and again apply a little of the prepared albumen solution for about half a minute; drain again, and apply the alkaline developer as before; the image will then, perhaps, rush out very rapidly. This method can be repeated as often as necessary; but, as a rule, with a properly exposed plate, one application of the albumen is sufficient. If more density is required, a drop or two more of P solution can be added. If too much pyro is used, a very hard negative is the result, so it must be used with judgment. I have actually developed a 24 by 18 plate to full printing density with only half a grain of pyro. I think I mentioned the same fact in one of my papers read last year before the South London Photographic Society. I see that Mr. Henry Cooper refers to pyro being used with caution. The formula given for solution A is given for work under normal conditions. In the winter time the bromide can be reduced one-half, and in very warm weather it can be increased.

I have used the albumen as given above for several years, and the more I use it the more I like it, as it gives an image so much like a good wet plate taken under the best conditions.

Should it be desirable, the intensity can be brought up in the ordinary way before fixing with acid pyro and silver, same as for wet plates. The plate must be well washed to free it from all traces of ammonia, and before the silver is added to the acid pyro it is first applied to the plate alone, which will generally be sufficient to neutralize whatever may have remained in the pores of the film. The plate is then fixed in the ordinary way with—

Hypo	...	...	...	...	2 ounces
Water	...	...	...	...	1 pint

and then well washed.

I also, whenever I use hypo for fixing, especially for those films which are very porous, allow the plate to soak in plenty of water for half-an-hour to get rid of all traces of hypo. The plates require to be dried spontaneously, and then varnished in the usual way.

By the above system last year I prepared for two friends of mine 156 plates which were exposed on the Continent, and returned to me to develop, and I developed 151 good negatives; the other two were faulty, through one being exposed twice, and the other not at all. Some of the negatives were perfect gems.

I think plates prepared and developed in this way would meet all the requirements for the Paget competition, which, I believe, is to be held this year.

GOOD PRICES V. HARD TIMES.

BY G. FRANK E. PEARSALL.*

HAVING had various opportunities of observing the result of different experiments how to keep up business in these hard times, and having given considerable thought to the important subject whether it is advisable or necessary to reduce the price of pictures, I propose to relate my observations, feeling that a discussion on so vital a question once started, will induce others more able than myself to give the profession their views.

1st. The question occurs, Is it wise to lower the price of photographs, when in all probability the cost of producing them must continue to increase in the same ratio as in the past? For it must be admitted that the motive power instrumental in bringing photographs up to their present state of excellence has been chiefly by the increased cost of producing them. Therefore it is not reasonable to expect the same for the future development of our art, which, notwithstanding the rapid strides it has made, is still in its

infancy, and must attain a greater perfection in the future. Thus, with but a moment's reflection, it does not appear that it would be either wise or advantageous to lower the selling prices of photographs; but, on the contrary, such a course must be productive of harm to the profession, lowering its moral standard, and impeding further progress in artistic improvement. To make better work for a small than one would for a large price is hardly a human attribute; therefore to reduce the prices necessitates and is but a reduction of wages, which is certain to dull ambition's keenest monitor.

2nd. The question is asked, Is not the public to be considered; have they no rights that we photographers are bound to respect? They say they cannot afford to pay as much as they used to. I say, most emphatically, we are respecting your rights; we are aware the times are hard, that money has a greater purchasing power than formerly, but we are giving better and more expensive work for the same money; more time is spent in securing a good likeness; more proofs are submitted; in fact, more than double the time and labour is expended in your behalf. Such answers as these should be made by photographers in a manly, straightforward way. It is but the truth, and, if rightly explained, will be admitted by any intelligent person who wants a sitting. If any doubt arises, ask the first customers if they do not think very great improvements have been made in photographs. Invariably they will answer in the affirmative, thus admitting the pictures to be worth more. Seemingly, people have a mania for cheapness; some photographers, thinking it genuine, have catered to this feeling, and resorted to numerous devices, hoping to scoop in the public by clubs, or offers to give away a large picture if some one would come and buy a dozen small ones at one dollar or less per dozen. All this "clap-trap" style of doing business has failed in its object, and those who have entered into it are dissatisfied and convinced that it was a poor investment; at least this is true of those cases that have come under my observation. Many, if not all, of them would be very glad if they had retained their former prices; but how are they to get them back? The present dulness must sooner or later pass away, and then a better feeling will pervade all lines of trade, and those people that have abstained from sitting for pictures, even though the price has been so low, will come to the front, seek out a good artist, and be perfectly willing to pay a fair price. Unfortunately, one photographic fool makes many; advice to them is thrown away; they must suffer the consequences of their own folly. I only hope to call the attention of others to this fact, that, as no man can say to himself, he alone has advanced the art and science to its present perfection, what right has he to reduce the standard price? Morally he has none, because each and every one is indebted to the other. The individual knowledge possessed by any member of the profession has been derived from a common fund, to which all have contributed, thus creating a moral obligation, which should demand a united consideration. I consider it unprofessional for any photographer competent to do good work to injure the standard values by reducing the price; he should remember that there are others to whom he is indebted, and consider the question well before doing them so grave an injustice. These remarks seem pertinent to the welfare of our calling, for it is said that in union there is strength. If we only stand by each other, what necessity can there be for lowering our prices? The public is constantly demanding better pictures; we, by study and costly experiments, are striving to meet this demand; each improvement adds something to the cost of a picture, reducing the profit on our labour. These improvements are constantly being made, thus adding to the cost of photographs year by year. Does it not seem a suicidal policy to think of taking a backward movement regarding prices? Surely the inference drawn from the facts here presented is most positively opposed to any reduction. The peculiar character

* *Mosaics*, 1879.

of our calling, it being more strictly a profession than a business, is opposed to any tendency to cheapness, for if a man is selling the results of his talent, and holds them cheaply himself, who is to value them?

In concluding these hints, and leaving them to be digested by the craft, I would add, as a palatable dessert, that several who have cut under to such a degree are now anxious to sell their traps and hide themselves ostrich fashion.

POLICE PHOTOGRAPHY.

THE Paris Correspondent of the *Baltimore Sun* writes:

"Coming by the back of the Champ de Mars to-day, I was attracted by a group around a photographic policeman who was making rather an awkward effort to take a picture of an old house where an aged woman had suddenly died. I inquired into the subject. It appears that the poor old soul at eighty-seven years of age put out her lamp of life sooner than was expected by her neighbours. A young man had disappeared, and so had a few hundred francs. The police were put on the *qui vive*, and the first thing they did was to photograph the cold old corpse, and then the house. Now they are looking for the missing youth to take his picture. It is amusing to see the varied uses that photography performs among the Paris police. First of all they photograph themselves, from the highest to the lowest. Then they photograph some of their relations, and perhaps friends. They photograph all their first and second-class prisoners. In the exhibition their "rogues' gallery" is quite an array of celebrities, and would form a volume of sketches. Photography is applied in all cases of murder as to persons and places. Before the murdered body is moved, it and all the surroundings become carefully photographed. This is done by a special number of the police in uniform, whose entire work is devoted to the subject. Photographs of grand masters of the art of roguery and rascality are exchanged between the police chiefs of all nations. Thus to-day you can see some portraits of the wayward sons and daughters of Baltimore, Washington, Richmond, New Orleans, Charleston, &c., in "places of honour" on the line of the Paris police fine-art gallery. They are numbered, and this number is in an index, historical and descriptive book. The days of the dark-lantern with the police are changed into hours of the camera, but not camera *obscura*. I am told that the list of crimes detected through the agency of photography is an extremely long one. See to what detective purposes has the original idea of the long lost Daguerre come at last! Instances of forgery are numerous as being detected by photography. The Bank of France has a special photographic and scrutiny department for the detection of forged notes, bonds, &c. But its invisible portrait gallery for taking the likeness of a person without that person knowing it is unique and full of anecdotes. On one occasion a distinguished-looking person came to the bank desk and presented a little package of bonds of a certain English loan. The bank clerk did not readily relish the looks of the bonds, though those of the person were quite the thing. Stamping a little hand-bell—a signal for the photographer, who has his gallery in clear range of the applicant's desk, yet so constructed that it is not easily seen—the clerk engaged the stranger in conversation about the bonds, and in such a way that the photographer should have a good view of his face. This time a country school-master, as honest as the sun of day, thrust his face in by the desk, and he was photographed in company with one of the greatest forgers of France. The sensitiveness of photography is illustrated at this bank when ink marks invisible to the eye on the original document become quite plain on the photograph. You cannot alter, by writing, any paper, but photography will detect the "meddlesome pen" sooner or later. An erasure on the paper, if done ever so smoothly, is discovered by photography. The character and style of chirography is also

well tested by photography. Photograph some of the letters in a sentence, enlarge the photograph, and you have "a big guide" as to style easily followed and made a criterion. The post-office department here has its photographic director, and many a letter is opened, photographed, compared, and stored away for future evidence. Surrounded by such agencies, how well "honesty being the best policy" is proved to us! In the Exhibition you can see some instances of visitors there being unconsciously photographed. One old lady, however, discovered the police at their proceedings. Up she bounded, over went not only her chair, but the three near-by ones; down she dashed her umbrella, down she pulled her veil, and up she pulled her skirt over her head, and turned her back in a triumphant air up to the rash policeman. "What!" she exclaimed; "taking my portrait for a prison! O Jule, Jule, where art thou?" I am sorry to say her spouse Jule was in the arms of Morpheus, and cared not for photography. She went and demanded reparation, and was mollified by getting her photograph of her enraged self.

A PHOTOGRAPHIC ACTION.

ROSENBAUME v. AVERY—IMPORTANT DECISION.

THIS was an action brought in the Bloomsbury County Court on Friday last, before Mr. Judge Bacon, in which the plaintiff, an artist, sued the defendant, a photographer carrying on business at Ladbroke Road, Notting Hill, to recover the sum of £50 for the loss of a testimonial sent to the defendant by a boy in the defendant's employ to copy and mount.

Mr. Atherly Jones, who appeared as counsel for the plaintiff, in opening his client's case, stated that he was an artist, and a well-known chess-player, and that in September of last year the boy in question called upon him for an account, and to whom he gave a cheque, and at the same time the testimonial, the subject of the present action, with instructions to inform the defendant that the plaintiff would call upon him and say fully what he required to be done.

The Plaintiff, being called, corroborated this statement, adding that he had made repeated applications for the roll, and, not being able to get it, had recourse to the present action to recover the estimated value of it.

This evidence was supplemented by that of William Freedan, who said he was a messenger in the defendant's service, although he had been subpoenaed by the plaintiff, and interviewed by the plaintiff and his solicitor, and had been to the defendant's house and given information since that, and had talked the matter over with the defendant. He said, he was instructed by the defendant on the day in question to collect account for him from the plaintiff, Mr. Lenthall, photographer, and others, and was allowed to bring goods home to the value of £1 or so.

The evidence of Herr Zerkert, the champion chess-player of the world, went to show that although the testimonial was of no intrinsic value, it was of inestimable value to the plaintiff, as it could not be replaced.

These being the leading facts of the plaintiff's case.

The Defendant said he never had seen the testimonial, which must have been lost by his boy, who had no authority to bring away from his customers goods of so great a value. He had, in consequence of receiving a threatening letter from the plaintiff, denied his liability, as he did not recognize the boy being his agent in the matter.

At this stage of the case the learned Judge came to the conclusion that in reality the boy was the agent of the defendant, but that the agency was a limited one, and the matter in dispute was merely one of amount; and recollecting that the boy was empowered to bring home goods to the amount of £1 or so, the justice of the case would be met by giving judgment in favour of the plaintiff for £1, although he could not dismiss the case without thinking that there had been some negligence in entrusting an article of such value to so young a boy.

A GOOD ADHESIVE MATERIAL.—Water, 1 ounce; methylated spirit, 2 ounces; dextrine, 2 tablespoonfuls. Mix the water and spirit; stir in the dextrine, making a smooth paste, and place the vessel you make it in in hot water till a clear brown solution results.—*Scientific American*.

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EFFECT OF TOBACCO SMOKE ON SENSITIVE FILMS.

A CURIOUS circumstance, which is worthy of record and comment, recently occurred at a meeting of the Photographic Society of Berlin. Our esteemed correspondent, Professor Duby, read a paper, accompanied by specimens and experiments, on "Positives, their Different Methods of Preparation." He presented a number of beautiful examples. Finally, he undertook to show the practical working; but the paper, charged with bromide of silver, instead of yielding clear and beautiful prints as formerly, now gave only foggy, indistinct pictures, which at first could not be accounted for. Dr. Harnecker, however, suggested that the trouble was due to the tobacco smoke that during the lecture had filled the room. This conclusion was agreed to by all present, and the general opinion was that it would be quite impossible, under the circumstances, to obtain good prints.

Notwithstanding the general agreement of the meeting as to the baneful influence of the tobacco fumes, it must not, we think, be taken as a proved fact that the smoke of tobacco has this prejudicial influence on the prepared plate. Among professional photographers it is, we apprehend, scarcely likely to be tested, as smoking whilst operating would suggest a lazy mode of working scarcely conducive in any way to success. With amateurs it is different. An easy, leisurely mode of proceeding is indispensable to the enjoyment of a hobby; and the devotee of the Nicotian weed will proceed about many photographic operations with increased enjoyment when it is accompanied by a choice Partagas or a well-blackened pipe. That no harm need be feared is, we think, vouched by the experience of many very able amateur photographers. One of the first and best among these, Dr. Diamond, we have often seen with cigar in mouth whilst developing a plate, and we never saw or heard of any injury resulting. Amongst more modern amateurs there is none to excel R. Manners Gordon, the prince of neat manipulators as well as of artistic photographers. We have never seen him in his dark room without a cigar in his mouth, a circumstance which probably conduced to the deliberation of development to which he attributed a good deal of success. Many other cases might be cited; but these will serve, we think, to prove that whatever evils may be attributed to tobacco, injury to photographic plates is not one which can be legitimately alleged.

The circumstance of smoking being permitted during the progress of a photographic meeting will surprise English readers; but tobacco and beer are, we understand, not uncommon accompaniments in Fatherland to the discussion of scientific subjects. Whether this country would gain by following the example is doubtful, but it might be worth consideration.

PHOTO-CHROMO MINIATURES.

WE have very often brought under the attention of our readers methods of producing effective coloured pictures by colouring at the back of the print. A method of this kind has been recently introduced as a secret process, for details of which a fee has been charged. A similar method has been introduced by Messrs. Barnard and Son as "Chromo-Photography, invented by H. Krauss." Boxes of materials and colours for the operations are supplied by this firm, who give the following instructions. With skill and perseverance good results may be obtained by the use of ordinary materials; but for those wishful to obtain good results with little trouble, we may mention that boxes with every requisite may be obtained of this firm for a guinea. Here are the instructions:—

"Take an unmounted, rather strong print (photograph), and trim the same somewhat smaller than the convex glass to be used; wet it thoroughly in clean water, and then lay it, face up, on a sheet of glass or porcelain dish, blotting off the water; then spread over it with your finger some of the prepared paste, and apply the same also on the inside of the convex glass, which ought to be carefully cleaned; then pick up the picture, and lay it face down into the glass, and on the top of it a piece of smooth tough paper, and rub out all the paste and air-bubbles with the sharp edge of the squeegee, holding the glass in your left hand, so that you can see the picture, and the tool in your right hand, pressing the thumb against the edge of the glass, work from the centre, using but slight pressure, and frequently change the paper on the back, which serves to protect the print from getting scratched and torn. After the print is perfectly mounted, without showing either wrinkles or blisters, let it dry thoroughly, but spontaneously. Then grind the paper partly off on the back with fine sand-paper, and immerse it in a small tin pan containing the transparent medium, and melt the same on a lamp or stove; a good plan is to have the pan fitted into another pan, holding a hot water bath, which keeps the medium in a molten condition a long time, without heating too much, in which case it would affect the colour of the picture, turning it yellow. It will only take from twenty to thirty minutes to make the picture perfectly transparent; then take it out of the pan, and clean the glass side first (*the inside allow to cool off a little*), and with a coarse rag rub off all the surplus of the medium, laying the glass on a small cushion to avoid breaking. Now the picture is ready for painting. All white draperies—such as collars, laces, shirts, &c., also the corners of the eyes—are painted on the back of the photograph with permanent white; while painting, lay the picture on a sheet of white paper. Jewellery, lips, eyes, flowers, and small things of the kind, are also coloured on the picture itself, only care has to be taken to keep exactly the outlines. When this part is done, take a second convex glass, put it over the photograph on the back, and fasten the edges together with adhesive paper, holding the glasses together with spring clips; now mix the flesh colour, and on the back of the second glass paint over the face, also the hair to make it the tint and shade desired; the same is to be done with the drapery, dress, backgrounds, and all other parts of the picture; when part is painted, turn over, lay the picture on a white paper and judge the effect; any alteration can easily be executed by wiping the paint off with a rag. As a rule, mix all the colours on the second glass with white, to make them perfectly opaque, while in colouring the lips, hair, dress, &c., on the first glass, mix the colours with some of the oil, to keep them transparent; don't apply too much colour, and keep your brush almost dry. Special instructions for mixing colours for complexion, hair, &c., are found on each box of colours. Clean the brushes with turpentine, or soap and water. When the picture is painted, back with cardboard, and frame it.

"Sometimes the picture refuses to become quite clear and

transparent, showing some grey, opaque spots; these can easily be removed by scraping with the sharp edge of the squeegee while the whole is lying in the pan. These spots are caused by the paste which remained between paper and glass. Instead of the prepared paste, a good, well-boiled, stiff flour-paste can also be used with success. If the paste should dry too quick while mounting the picture, wet it again, and work it over once more with the squeegee, to remove all the paste.

"Photographs having light spots can easily be retouched with oil or water colour (india-ink mixed with a little carmine and blue); this work must be done on the back of the picture, after it is transparent. If you want to use mounted photographs, they must be taken off the mount; to do this perfectly, soak them in warm water about fifteen minutes, then lay them in a flat porcelain dish filled with water, and press them face down against the bottom of the dish with your left hand; with your right hand take hold of the cardboard, carefully peeling and rolling the same backward: never touch the picture itself. Photographs that are waxed on the surface must be washed thoroughly with benzine or ether, to dissolve the wax, before dismounting. If you do not succeed in anything during the work, read these instructions over again carefully, and you will be sure to find out the trouble."

SPECTRUM PHOTOGRAPHY.

Our readers will scarcely look to the columns of a daily newspaper for discussions on the technics of photography. We find, however, this in the *Times* of a few days ago:—

SIR,—In the article in the *Times* last week on recent developments of photography, it was stated that it has been found that by adding aniline colours to the sensitive film in spectrum photography the lines corresponding to the colours added were brought out in the negative. This was at first claimed by Vogel, but careful experiment proved that there was no such effect from the addition of any colouring matter. I had the pleasure of trying a series of experiments with Mr. Lockyer in his laboratory at South Kensington, strictly according to Vogel's directions, and they utterly failed. It was found that certain substances did, however, increase the sensibility of the salts of silver to lines not readily to be obtained without them; but this had no relation to their colour, as the most marked effect was shown with colourless alkaloids.

Professor Draper, of New York, showed, however, that the whole spectrum was photographable by employing an ingenious mechanical arrangement for shutting off the most powerful lines when they had done their work, and letting the light continue to act on the weaker. His father, Dr. Draper, had done the same thing at an earlier date on the Daguerreotype plate by availing himself of the well-known reversing action of light on iodide of silver.—Yours truly,

W. J. STILLMAN.

Florence, January 1st.

A subsequent issue of the same journal contains the following reply from Captain Abney:—

SIR,—I see in the *Times* of to-day that my friend Mr. Stillman throws a doubt on the action of dyes on a collodion film. I am quite at one with him regarding the theory that Vogel holds, but I am bound to say that in many instances the dye does give a power to the film which it does not otherwise possess. The addition of a dye often produces a silver compound which is impressionable by any light which it may absorb; and there are dyes which in themselves bleach in light and become oxidized, as the fair sex know to their cost. The first class of dyes, when combined with silver, are amenable to ordinary development. The latter class, when oxidized, have the power of attracting freshly precipitated silver, and thus an image in silver is built up. If Mr. Stillman consults the various photographic periodicals of the last two or three years, he will find that I have described these actions of dyes at considerable length.

Professor Draper's method of photographing the "non-actinic" rays I have never been able to succeed with; but Dr. Draper's excellent plan I have frequently employed, and I have had the good fortune to explain its theory and to enlarge its applications.—Yours faithfully,

W. de W. ABNEY, Capt. R. E.

Kensington, January 7.

FRENCH CORRESPONDENCE.

NEW METHOD OF RETOUCHING NEGATIVES—RUSSIAN PYROXYLINE—ARTIFICIAL LIGHT IN PHOTOGRAPHY—RECENT PROGRESS IN SOLAR PHYSICS.

New Method of Retouching Negatives.—On Friday last, at the meeting of the *Société Française de Photographie*, M. E. Lanry read a paper on a process for retouching negatives by quite a novel method. It depends essentially on the use of a new product—collodion stained red with orchanet. When the back of the plate is coated with this red collodion, the negative can be retouched to a considerable extent, and very artistic work can thus be produced. The back of the negative to be retouched is first coated with an albumen substratum composed as follows:—

The white of 3 eggs	...	...	90 c.c.
Water	...	...	75 "
Liquid ammonia	...	...	50 "

This must be well shaken, and the following mixture is then gradually added by small quantities at a time:—

Sulphuric ether of 62° or 65°	...	100 c.c.
Alcohol of 36° or 40°	...	50 "

The white of the eggs must be beaten to a froth in the water, in order to separate the coaguline. The more ammonia that is used the larger is the proportion of ether and alcohol that can be added to the mixture without coagulating the albumen. All these substances—the ammonia, the alcohol, and the ether—are only used to make the albumen keep good for a long time, to facilitate its application to the glass, and to promote its desiccation. The ether and the alcohol should be added after the ammonia, and not until the latter is well incorporated with the albumen. The mixture is then allowed to stand, and when it is freshly prepared the ether will be seen to separate and to rise to the surface; under such circumstances it must be well shaken, that an intimate combination may again take place. But at the end of a fortnight from the first preparation the ether will no longer separate. Before employing the liquid it should be filtered through filtering paper, and it will then keep for an indefinite period of time without decomposing. For coating the back of the plate with the mixture, a soft brush may be used, or it may be flowed over the plate in the same way as collodion. When the negative has thus been coated, it must be placed in a vertical position on a draining rack to dry, and must be left there for from ten to twenty minutes. Over this substratum must then be flowed in the usual way the red collodion, the formula for which is given further on; but in doing so great care must be taken to prevent any of that substance from running over the edges and on to the face of the negative, for the latter would be stained by it. This collodion is prepared as follows:—

Ethereal tincture of orchanet (filtered)	...	100 c.c.
Alcoholic ditto	...	50 "
Low temperature pyroxylin	...	1.5 gramme

The ethereal tincture of orchanet can be made by filling a wide-mouthed flask, well stoppered by a cork, with tolerably dry roots of orchanet and sulphuric ether of 62° or 65°. The roots are allowed to digest in the ether for a day or two, shaking them from time to time; the liquid is then left to stand for twelve hours, and is afterwards filtered through filtering-paper into a narrow-necked flask. By a similar method the alcoholic tincture of orchanet may be prepared, substituting only alcohol of 36° or 40° for the ether. This tinted collodion may be coloured more or less deeply by adding to it ordinary collodion. After the negative has been treated in this way, any part of it that may be wished can be reduced or decolourised by means of a brush of sable or badger hair, which is dipped in alcohol of 40°, and applied to the part

in question. In performing this operation, one must be guided pretty much by taste, and in this way weak negatives can be intensified, and vigorous ones reduced, as may be requisite. For portraits the method may be adopted in giving greater brilliancy to good negatives, in diminishing the effects of light on the figure, and in inserting details in white garments, or in the hair, &c. For landscape negatives it can be employed in bringing out more strongly the details of foliage, &c., in separating the different planes of perspective, and in lowering the very high lights. In those parts of the collodion that have been decolourized, a still greater effect may be produced by skilful scraping. To prevent the outlines of the decolourized portions from printing too hard, they can be lowered or softened by a brush moistened to the requisite extent in alcohol, and the outlines of the parts that have been scraped can also be softened by hatchings executed with the point. A large dry brush should always be kept at hand to sponge up the solvent as soon as it has produced the required effect. With a brush dipped in the alcoholic tincture of orcheat the film of red collodion may be made to take up a still greater amount of colour by spotting, which will have the effect of intensifying the corresponding portion of the negative. Lastly, by means of a soft brush, the film of red collodion, applied to the plate and worked upon as has been already described, can be again overlaid with a fresh film of the albumen solution, whose formula is above given; this acts as a sort of varnish, and gives the back of the negative a power of resisting the rubbing to which it is subjected by the thick glass plate of the printing-frame.

Russian Pyroxyline.—At the same meeting, several specimens of Russian pyroxyline, the introduction of which into this country is due to M. Warnerke, were exhibited to the Society.

Photographs by Artificial Light.—An English photographer, whose name escaped us, at the same meeting, called the attention of the members present to the *Lunograph*; it will not be necessary for me to describe this instrument, as it is already well-known to the readers of the PHOTOGRAPHIC NEWS. Speaking generally, however, I may say that in Paris, at all events, the minds of the best photographers are much occupied with the subject of artificial light for use not only in photographic printing, but also in the production of negatives. Numerous experiments with this object have been carried out in several of the laboratories, and more especially in that of Pierre Petit. Of course it will be of great advantage to those establishments where printing is extensively carried on to be able to prolong the day, and to utilize the evenings and nights that are so long at this season; but my own belief is that even on the shortest days, the portrait photographers enjoy quite sufficient solar light to satisfy the demands of their customers. Nevertheless, these experiments are highly interesting for our profession, and I propose to recur to them at greater length in a future letter.

Recent Progress in Solar Physics.—The Year-Book of the *Bureau des Longitudes* for 1879, which has just been published at the library of Gauthier-Villars, contains an article by M. Janssen on recent advances in solar physics. The illustrious director of the Observatory for Physical Astronomy established at Meudon, gives a prominent place in this article to the important part that photography plays at present in scientific researches, and he describes the numerous results obtained by its means. He has illustrated his remarks by subjoining to his article a double plate printed by the Woodbury process, representing two images of the same region of the sun's face, taken at an interval of fifty minutes. These two plates demonstrate in a remarkable way the rapid changes in the reticulations and granulations of the photosphere.

ERNEST LACAN.

ON THE ADDITION OF SODA OR OF YELLOW CHROMATE OF POTASH TO THE CHROMATE BATH IN THE CARBON PROCESS.

BY DR. J. M. EDER.*

THE addition of soda or of yellow potassium chromate to the chromate bath of carbon tissues has often been suggested of late. Opinions, however, differ on the subject: on the one hand it is asserted that certain advantages are gained by the addition; on the other, it is declared to be of no use.

Before coming to a conclusion on the point, it may be as well to have a clear idea of the action of the yellow potassium chromate.* As I have explained in my prize treatise "On the Re-action of the Chromates on Gelatine" (see PHOTOGRAPHIC NEWS, vol. xxii., 1878, p. 555), carbon tissue sensitised in a 3 per cent. solution of yellow potassium chromate is from twenty to fifty times less sensitive to light than when the bichromate is used. On the other hand, the chromated pigment paper is much more durable in the first case than in the second—it is much less liable to become spontaneously insoluble in the dark. This enhanced durability is the principal reason that many authorities give for recommending the addition of sodium carbonate to the chromate bath, in order to obtain successful results with the carbon process, more especially in summer.

The chief effect of such a restraining of the potassium bichromate is equivalent to a removal of some of the active part of it, for each molecule of neutralised bichromate has in a great degree lost its sensitiveness to light, and is therefore very slightly active during the process. Whether one-half of the bichromate is restrained with soda, or the solution is diluted to the extent of a half, the same result is obtained.

Restraining the chromate bath with ammonia has also the effect of rendering the sensitised carbon tissue more durable, without injuring its sensitiveness to light; the chromated gelatine is rendered much less effectively durable, and becomes more freely insoluble in the dark, than when soda has been used. In some cases the addition of soda or of yellow potassium chromate to the chromate bath is of positive advantage.

When the employment of a *strong* chromate bath seems advisable—that is, when *soft* copies are wanted, especially in printing from hard negatives in dull winter weather—then neither sodium carbonate nor yellow potassium chromate should be added, but only a few drops of ammonia, otherwise the chromate bath will become too weak, and will act like one that has been too highly diluted. But if it be necessary to work with a *weak* chromate bath—that is, if it be required to produce *harder* copies, particularly when printing from very soft and very thin negatives, in the hot and damp weather of summer—in that case, it is often of advantage to moderate the action of the potassium bichromate by adding soda or yellow chromate of potash. The same end can be attained by diluting the bath; but restraining with soda gives more delicate pictures and finer half-tones. It appears to answer the purpose better to have in the film, in addition to the very dilute and sensitive bichromate, a moderate quantity of the less sensitive monochromate, and thus to obtain a shallower impression than when the dilute bichromate alone is used. The addition of soda also prevents, up to a certain point, the formation of reticulations in the carbon prints.

In summer, and in hot close weather, when the sensitised paper is liable to spontaneous decomposition, and when more especially soft negatives have to be copied, I recommend the addition of soda to the chromate bath rather than diluting it. About so much dry (calcined) soda must be added as is equivalent to one-third or one-

* *Photographisches Archiv.*

* Or, to express it chemically, potassium monochromate; by mixing potassium bichromate with soda the homologous salt sodium monochromate is formed. Both salts have the same action.

half of the bichromate bath. When the bath is newly prepared, the following solution may be recommended:—

Potassium bichromate	...	4 to 5 parts
Calcined soda	...	1 to 1½ "

Dissolve in 100 to 120 parts of water. A mixture of about three parts red chromate of potash with one part of yellow produces the same effect.

In conclusion, I desire to draw the attention of my readers to Liebert's remarks on the same subject in his highly interesting work *La Photographie en Amerique* (3rd. edit., 1878). His directions are to immerse the carbon paper for from one to four minutes, according to the temperature, in a chromate bath of 2 per cent. in summer, and 3 per cent in winter,* to which—if it happens to be acid—1 or 2 drops of ammonia to every 100 c.c., or 1 or 2 c.c. of a concentrated solution of soda, must be added. As these additions lessen the sensitiveness of the chromated gelatine,† they must, if possible, not be resorted to in cold weather—that is to say, when the carbon paper is easily soluble, and especially when the negatives employed are weak. But when very intense negatives have to be printed from, the following bath is to be preferred:—

Potassium bichromate	...	2½ grammes
Mono-(yellow) chromate	...	2½ "
Water	...	75 c.c.
Alcohol at 36°	...	25 c.c.

The two latter ingredients must be mixed‡ before the salts are dissolved in them. Liebert previously crystallizes the salts from solutions in order to remove any traces of chromic acid and chrome-alum, but, according to my own experience, this trouble is quite unnecessary.

It will be seen that Liebert only has recourse to the yellow chromate in summer, though he uses more of that salt than corresponds to the addition of soda that I have given above.

We are also agreed on the durability of the carbon papers that are sensitized with this substance. But, on the other hand, I differ from Liebert as to the condition of the negative. I recommend a bath containing potassium monochromate, or soda, for thin and weak negatives, while Liebert advocates it for intense negatives. My own views I still hold to be correct, but should like to ascertain the opinions of other photographers on this point.

Correspondence.

SUBSTRATA FOR DRY PLATES.

DEAR SIR,—In finally arranging THE PHOTOGRAPHIC NEWS for the past year, prior to sending them to the binder, I quite accidentally alighted on page 273, and read a very interesting article on a "New Substratum" contributed by Mr. Henry Cooper; by some unfortunate and unaccountable reason I missed the article when it appeared, or I should have written thee what I now write.

In 1873-4, prior to the "Transit of Venus," and the selection of a dry plate or emulsion process that could be relied on for that work, I had, in conjunction with others, to devote much time and attention in endeavouring to obtain a thoroughly faultless and reliable substratum. Experiments were carried out with various substances, such as india-rubber dissolved in pure chloroform; dried albumens and gelatines of several strengths, in various menstrua; whilst gelatine and albumen were separately

treated with nitric acid, tannin, and chrome-alum, for the formation of an insoluble substance. The latter, when added to the gelatine and albumen, was discarded, owing to the colour it imparted to them, being sometimes of a pure tint, and was thought at the time would be detrimental to the transparent parts of an otherwise good negative. After various trials with the numerous experimental substrata, it was finally decided to use the formula published at the time, viz.:—

Albumen...	...	10 grains
Distilled water	...	10 ounces
Liquor ammonia fortis...	...	1 drop

Applied with the valuable brush introduced for that purpose by Mr. Valentine Blanchard. It will thus be seen that chrome-alum added to gelatine was used as a substitute prior to the date recorded by Mr. Henry Cooper in the article referred to.

It is reluctantly I bring this forward; but I do so in the most friendly manner, not with the object of detracting one jot of credit so justly due to Mr. Henry Cooper, who publishes without reserve his highly interesting researches and instructive results, as he has done in the present case, having published fully a substratum for practical use; still, I think it is only right to show that the same experiments have at a previous period had a fair trial in totally different hands, emanating from another independent source—in fact, to different persons marching over the same ground, at different periods, though with variable results.—Yours truly,

WM. B. DOYLE,

Quarter-Master Sergt. Instructor.

Photo. School, S.M.E., Chatham.

PHOTOGRAPHY BY MEANS OF OXALATE OF IRON.

SIR,—It is against my wishes to prolong a controversy with an anonymous writer, but I cannot refrain from pointing out how weak is the case of "Historicus."

In my last letter I gave the reasons for my holding the opinion that Dr. Draper used the ferric oxalate photometer, and that he also produced, if not the first photograph, at all events, one long prior to Dr. Phipson. I still hold the same opinion, for I certainly shall not doubt Dr. Draper's word, although I do not refer to the original memoir. Assuming, however, that Dr. Draper has made a statement which is not true, there still remains Hunt's statement regarding his own production of pictures with ferric oxalate to be disposed of by "Historicus," before the claim on behalf of Dr. Phipson can be admitted. I have already given the date of the publication of Hunt's work (viz., 1854), so that a photograph by the aid of ferric oxalate must have been taken some six years before Dr. Phipson began his experiments. I may remark that the fact of my not having the latter gentleman's papers by me cannot affect the question of priority, and I fail to see that it can detract from the credibility of the statements I made and still adhere to.—Yours faithfully,

W. DE W. ABNEY.

SIR,—Your correspondent "Historicus" appears somewhat too positive in his assertion that the first picture in oxalate of iron was produced by Dr. Phipson in 1860. It is at least certain that the capabilities of this salt were known and published prior to 1860. I have before me "A Manual of Photography," by Robert Hunt, third edition, 1853. Chap. IX. of this work is "General Summary of the History of Photography," and states: "It is thought that it may prove of some interest to append the following table, compiled with much care for the British Association, by the author, and printed by that body in their reports for 1850, and to which now numerous additions are made. It is believed that the dates of discovery are accurately given, the date of publication being, of course, in all cases taken where there was the slightest doubt." Then follows list of the metals, with their salts, &c. I give the one headed "iron."

* Quite contrary, therefore, to the rule which prevails among ourselves: "Strong baths in summer, weak ones in winter."

† My own experience showed that this statement is true for soda only, but not for ammonia.

‡ In my own formula, alcohol can also be added, and, indeed, I recommend the use of it.

Iron, protosulphate of	Hunt ... 1844
„ persulphate... ..	Herschel . 1840
„ ammonia-citrate	
„ tartrate of	
Attention was first called to the very peculiar changes produced in the iron salts in general by	Herschel . 1845
Iron, cyanic compounds of	Scheele ... 1786
„ (prussian blue)	Desmottiers. 1801
„ ferrocyanates of	Fischer ... 1795
„ iodide of	Hunt ... 1844
„ oxalate of	
„ chromate of	
Several of the above combined with mercury	Herschel... 1843

It appears certain from this list that the photographic properties of the oxalate of iron was published prior to Dr. Phipson's experiment, and cannot, therefore, be claimed for him as *original* discoverer of its properties.*

I may also call attention to the fact that Herschel mentions the peculiar properties of oxalic acid, in its power of precipitating gold, in his description of the process he invented by means of the ammonio-citrate of iron, and which he named the "chrysotype" process. He does not appear to have used the iron salt in combination, but the description might suggest a process similar to the one just invented by Mr. Willis.—Yours, &c., B. L.

CADETT'S SHUTTER.

DEAR SIR,—In reference to the letter of Mr. Vincent Hatch, permit me to suggest another method of supporting the velvet disk while focussing, when using the shutter inside the camera. I think that the following idea will be found an improvement on those of Mr. W. Barry and Mr. Vincent Hatch.

Place an ordinary stiff spring pinch-cock (such as is used in chemical laboratories) on the rubber tubing over the mouth-piece of the pear; when it is desired to keep the disk supported, squeeze the pear with one hand, and with the other slip the pinch-cock on to the rubber tubing just beyond the mouth-piece of the pear; the pear may now be let go, and the disk will remain supported, as the air cannot return.

The suggestion of Mr. V. Hatch with regard to reversing the angles of the pins supporting the disk is obviously good, for the reason he mentions; but I found out long ago that it could only be applied to very few of the cameras in general use, on account of the space occupied. I would suggest, therefore, that the camera be wiped out, before using, with a damp sponge, this would no doubt fix the dust.

To those who use the shutter outside, I would suggest that while the pear is being squeezed, the tubing be bent double, and held lightly between the thumb and first finger of the other hand; the disk can then be supported during exposure without holding the pear and cramping the hand. I mention this merely on account of the long exposures at this time of the year—the pear being made thick, so as to give a quick return in the case of children moving suddenly when being taken in a strong light.

Permit me to thank Mr. Barry and Mr. Vincent Hatch for the kind interest they have taken in my little shutter.—I am, dear sir, your obedient servant, JAMES CADETT.

MR. COOPER'S EMULSION.

DEAR SIR,—All photographers interested in dry plate photography will readily acknowledge and appreciate the obligations which Mr. Cooper has conferred upon them

* Our correspondent, in his interesting letter, overlooks the purport of the present discussion, which relates to the first production of pictures by oxalate of iron, not to the first knowledge of or suggestion of the photogenic properties of this salt. The photogenic properties of chloride of silver were known many years before they were utilized and a picture-producing process formulated. "He only discovers who proves," is a dictum of the highest importance. Suggestion is easy; but practical results, not merely tentative efforts, are of real value.—Ed.

by the publication of his Emulsion Process. There are one or two questions, however, that occur to me, and I have no doubt to many others, that Mr. Cooper would greatly add to our obligations by answering at his convenience.

1st. With regard to exposure. Of course it would be impossible to give any definite time, but some data might be given to go upon. On a fine day in May, for instance, to take a fine landscape with a No. 6 Portable Symmetrical lens with middle size stop, what time would be about right?

2nd. How or where does he obtain his syrupy lactate of ammonia? I cannot obtain it anywhere. To make it, would it be sufficient to allow the ammonia to act upon the sugar of milk, or is it got by a more elaborate means?

Next as to the emulsion. Seeing that the plates are washed and preserved in the ordinary way, would it not be as well to use the emulsion when ripe instead of washing and drying it; or is there any specific reason for the washing?

If Mr. Cooper will kindly trouble himself to answer the above questions, he will increase the debt we owe him, and especially your obedient SERVANT.

THE LUXOGRAPH TESTIMONIAL.

SIR,—From the remarks of Mr. Faulkner, he thinks I committed a breach of social etiquette by publishing his name without his sanction. So it would have been, had the demonstration been a private one, but it happens that it was quite public in every sense; hence I was justified in mentioning the names and quoting the opinions of those who were present, opinions that were corroborated by Mr. Gregson's manly and business-like letter.

I dismiss with a smile Mr. Faulkner's opinion of myself, which must have undergone a thorough revolution since he once did me the honour of telling me that he entertained the highest opinion of my commercial abilities, and made certain overtures to me respecting a business connection, out of which he proposed to take in my son as a partner, and found the firm of Lombardi and Faulkner for a consideration of £1,000.

In self-justification for having, if but for a moment, listened to such a proposal, I hasten to say that this was anterior to the famous background epoch, when a well-known gentleman dispensed a piece of chalk and a shoe brush to credulous photographers for the small sum of two guineas. I was one of the happy recipients of Fortune's favours, and I still scrupulously preserve the relics of what was to mark the new era of background art, but which ultimately proved to us to be a disastrous failure.

If Mr. F. endeavours to show that he suffered any loss by this only transaction I ever had with him, his remarks will not commend themselves to the reasonable appreciation of your numerous and intelligent readers. But if Mr. F. has not succeeded in persuading the discriminating readers of your important NEWS to believe what he conscientiously does not believe himself, he certainly hit the nail on the head by the information he gives them in his last paragraph—he actually found the philosopher's stone, and the way to subjugate the whole of Afghanistan without a single shot: he has discovered that the Luxograph offices are at 13 and 14, Pall Mall East, as if he thought that by advertising this fact in both NEWS and Journal, one would wish it to be kept as a secret.

The fact is, that Mr. Faulkner's repeated, unmistakable, enthusiastic, and eulogistic remarks of the famous evening of the Luxograph demonstration actually induced me to take the matter into serious consideration.

I owe my success in life to a determination I adopted from boyhood, of seeking the company of my superiors and following their advice. Fortune brought me into con-

tact with Mr. Faulkner, whom I always looked upon as a star of our profession. I heard his highly favourable remarks, and feeling that the commercial development of the Luxograph would prove a boon to my establishments, a great convenience to our customers, and an extra source of revenue to my exchequer, I secured three instruments at once.

I must therefore beg you, sir, to convey to Mr. Faulkner my grateful acknowledgment of his good advice, inasmuch as the Luxograph proved itself to be a very great success in every way.—I remain, sir, yours truly,
Pall Mall East, January 7th. LOMBARDI.

SIR,—As my name has more than once been mentioned in this affair, I beg to write a few lines. I was present at the demonstration of the Luxograph Light with Mr. Faulkner. The apparatus was in the crudest possible state, and many apologies were made and descriptions given by Messrs. Alder and Clarke as to what the future apparatus was to be. I heard Mr. Faulkner refuse to give a testimonial or order an apparatus until the improvements were made. A few days afterwards Mr. Faulkner thought he would fit up an apparatus with several alterations and additions, and he asked me to call on Messrs. Alder and Clarke to explain his intentions, and he asked to be supplied with a reflector and lamp; nothing else was required, no stand, or screen to soften the light, or chimney, or any fittings whatever. I think Mr. Faulkner's offer of £15 15s. most liberal.—Yours faithfully, DOWNE ROSS.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held at the Memorial Hall, Albert Square, on the evening of January 9th, Mr. CHARLES ADIN, President, in the chair.

The minutes of the previous meeting were read and passed, and Mr. Fred McLaren duly elected a member of the Society.

Mr. J. POLLIT, in reply to Mr. Brothers, said he had taken a negative of the interior of a large commercial establishment in town by the aid of the electric light; the negative was a good size. He used the wet process, and with a rapid rectilinear lens, with a three-quarter inch stop, and gave one hour exposure; and, although there were some rather deep shadows in the picture, they were not very objectionable, and owing to the very confined position in which he had to work, and the short time at his disposal, he was unable to arrange reflectors, &c. He was sorry he had not had the opportunity to make a print for the benefit of the members, but at the next meeting he would, he hoped, be able to show one. A long discussion followed upon the merits of the different electric lamps, regulators, and other apparatus.

Mr. J. C. SEWELL, who has of late devoted much time and attention to the subject of electric lighting, explained that he had seen a large workshop lighted by one regulator. The method employed was to put the regulator (or lamp) in a thing like a bucket suspended from and near to the ceiling. The whole of the illumination was therefore reflected from the ceiling in every part of the workshop, the light was excellent, and without objectionable cast shadows.

Mr. JAMES YOUNG then exhibited a transparency which he had printed by the light of the moon in sixty seconds on the previous evening. The plate was prepared with gelatine emulsion, and exposed in contact with a negative in the ordinary way.

Mr. ALFRED BROTHERS, F.R.A.S., thought this was a matter which should not be too hurriedly passed over. It was the first picture of the kind he had seen, and he was inclined to think that Mr. James Young would be able to produce a negative by the camera some fine night.

Mr. YOUNG said he thought so too, and promised to make a trial in that direction the earliest opportunity. He also introduced a very neat levelling stand, which he had constructed for use with gelatine or other plates.

Mr. J. W. LEIGH exhibited a collection of exchange prints from the prize negatives of the Amateur Photographic Society (London); they were all from wet plate negatives.

Mr. KNOTT said, with regard to the breaking of the glasses at each end of the flame chamber of the sciopticon, some people were more unfortunate than others, and he had been one of the unfortunate ones. He had, therefore, cut a slit at the top of the front portion of the body of the lantern, through which could be introduced the front glass, without removing the condensers. He found that by binding the edges of the glass with paper, if the glass did happen to break, it was kept in position, and he exhibited a glass of double length (or in duplex form), so that should one side break it could be easily reversed. Mr. Sewell, Mr. Coote, and several other gentlemen expressed surprise to hear of the front glass breaking, as it was most unusual.

THE SECRETARY read a note from Mr. Cussons, which was accompanied by a package of pocket almanacs kindly sent for distribution amongst the members, and a vote of thanks was passed to Mr. Cussons for his kindness.

Mr. J. W. LEIGH asked for a good rule or test for the comparative sensitiveness of dry plates, to which he received several replies.

THE PRESIDENT now introduced the subject of the annual extra meeting, and, after a conference with the Treasurer on the subject of finances, it was proposed, and unanimously carried, to have a knife and fork tea, at the next meeting of this Society, and that each member attending that meeting, whether to tea or not, pay two shillings and sixpence. It was decided to have a lantern exhibition.

Mr. AMBLER promised to read a paper, "Reminiscences of Photographic Experiences in Germany," and all members were earnestly requested to contribute as much photographic matter as possible.

THE SECRETARY said that, as usual, with lantern exhibitions of this Society, there would be a trial of members' slides on the evening before the meeting, and, to save disappointment, he begged to remind all present of the rule that no member's lantern slides could be shown unless received at the Memorial Hall on or before Wednesday, February 12th.

A vote of thanks was passed to the President and those gentlemen who had contributed to an interesting evening, and the members dispersed.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE third ordinary meeting of the present session was held in 5, St. Andrew Square, on Wednesday, 8th instant, Mr. LESSELS, the President, in the chair.

The minutes of the last ordinary meeting, of a council meeting, and a sub-committee meeting, having been read and approved, the following gentlemen were unanimously elected ordinary members of the Society: Mr. Malcolm Dunn, Mr. J. T. Johnstone, and Mr. Neill.

Mr. ROBERT MURRAY, C.E., then read a humorous paper, entitled "The Whisky-and-Water Process, a Northern Development of Mr. James Mudd's Gin-and-Water Process," in which the author satirized some of the shams connected with the process-monger and the pseudo-discoveries of would-be inventors. The paper was interspersed with anecdotes and local allusions, and was the source of much amusement to the members present.

Copies of "The Photographer's Pocket Almanac and Reminder" for 1879, sent by Messrs. Cussons and Co., of Southport, were distributed.

Talk in the Studio.

STREET PORTRAITS BY THE ELECTRIC LIGHT.—We are favoured by Mr. A. J. Jarman, of Ramsgate, with a couple of groups taken by the light of an electric street light, Westgate-on-Sea. As Mr. Jarman remarks, these are interesting as being the first out-of-doors night photographs—at least, as far as portraiture is concerned—which have been attempted. The portraits are of course but dimly illuminated, but there are some curious points to be noted. The electric light itself, shown on one picture, is dark from the reverse action of light, the halo around being brighter than the light itself. The opal globe is seen as a dark globe with a white edging, and a vertical line in the globe produced by the fittings, dark as seen by the eye, is a white line down the dark globe.

"YOU DIRTY BOY."—Photography has made many persons familiar, who did not visit the Paris Exhibition, with a clever plastic genre study entitled "You Dirty Boy!" in which a dirty

little urchin is being roughly lathered and scrubbed, whilst his nurse objurates him as a "dirty boy." We have received from Messrs. Thorpe and Watson a photographic burlesque of the same subject in which Lord Beaconsfield is administering the rough cleansing to the dirty boy Gladstone. It is clever, amusing, and not ill-natured.

OWNERSHIP OF SPECIMENS.—Mr. Richard Gay, representing the Staffordshire Permanent Portrait Company, Broad Street, Hanley, made an application to the Bench under the following circumstances:—Mr. Gay stated that he had discovered a process of transferring photographs on china, which he described as being more complete than any other process hitherto discovered. Some time ago he laid his discovery before Messrs. Powell and Bishop, manufacturers, and asked a certain sum and two free licences for the use of it. Terms were not accepted, but several pieces of china were lent him by the firm on which to transfer specimens for future consideration, it being a distinct understanding that if terms were not ultimately agreed upon the china on which the specimens were transferred should be broken. On the articles, however, being returned, the parties could not come to terms, but, instead of breaking the articles, Mr. Bishop said they were his property, and he should keep them.—Mr. Gay asked the Bench whether he could take action to enforce the destruction of the articles, as their existence in the possession of Messrs. Powell and Bishop might seriously interfere with any right of patent he might claim.—The Bench said that proceedings could not be taken in a Criminal Court, but damages might, perhaps, be claimed in a County Court.—Mr. Greenwood advised Mr. Gay to consult a legal gentleman, as the matter was not within the jurisdiction of a Police Court.—*Staffordshire Daily Sentinel.*

ARRANGEMENT OF PHOTOGRAPHS.—"Crowquill," writing in the *Queen*, says:—"A novel and very ornamental way of utilising photographs is to get a large sheet of cardboard, and cut it out into a large shape, either oval, round, or fancy; bind it with dark red or blue ribbon velvet, about two inches wide, and arrange the photographs all over, either in circles or some sort of regular pattern, first cutting them out in neat rounds or ovals. It is not necessary to float them off their cards, but only to peel the backs off. Use strong gum. When the whole is finished, tack two pieces of the velvet to the back, to hang the card to the wall, tying the ends into a good-sized bow where the nail is. I think many persons would be very pleased with these wall ornaments. They can be made as large or as small as desired. They are very easy to make. If they are required more ornamental, add a gold paper background, or paint a little round the photos. Screens for standing on a table are very pretty covered with photographs, and fans made of cardboard can be made without much trouble, and covered with them. I have seen cardboard cut into the form of fans, with a large coloured bow at the handle, covered with cartes, put up on each side of a looking-glass, and also used as hand fire-screens. Also I once saw the panels of a small boudoir ornamented with cartes, which really looked very well, and was most interesting to look at."

PLASTER OF PARIS.—Plaster of Paris may be made to set very quick by mixing it in warm water to which a little sulphate of potash has been added. Plaster of Paris casts, soaked in melted paraffine, may be readily cut or turned in a lathe. They may be rendered very hard and tough by soaking them in warm glue size until thoroughly saturated, and allowing them to dry. Plaster of Paris mixed with equal parts of powdered pumicestone makes a fine mould for casting fusible metals; the same mixture is useful for encasing articles to be soldered or brazed. Casts of plaster of Paris may be made to imitate fine bronzes by giving them two or three coats of shellac varnish, and when dry applying a coat of mastic varnish, and dusting on fine bronze powder when the mastic varnish becomes sticky. Rat-holes may be effectually stopped with broken glass and plaster of Paris. The best method of mixing plaster of Paris is to sprinkle it into the water, using rather more water than is required for the batter; when the plaster settles, pour off the surplus water, and stir carefully. Air-bubbles are avoided in this way.—*Scientific American.*

To Correspondents.

W. S. B.—We have not seen any comparative trial made of the two washing machines, and we are not, therefore, in a position to give any opinion as to which is best. We have the same facilities as our correspondents at p. 333:333:3: the 333 furnished by reading.

WAXY.—We are puzzled as to the nature of your trouble. You complain that your paper negatives are too transparent after waxing. But what is the disadvantage of transparency in a negative? Do you mean that they lose printing vigour and contrast? If this be so, the fault is due not to the waxing, but to the original from which the paper negative is printed. If you find, however, that there is sufficient vigour before waxing, you need not fear to use it without waxing. There are various things may be used instead of wax, but they would all possess similar characteristics. Paraffine may be used, or castor oil, or, in fact, almost any similar body.

G. S. B.—At the time to which you refer, Mr. A. Brothers was a portraitist in St. Ann's Square, and is still. Mr. J. Mull was a portraitist in the same Square, and is, we believe, still. Mr. John Eastham was a portraitist at that time in St. Ann's Square, if our memory serves us aright; but is now in Devonshire Street, Higher Broughton, Manchester. There were other portraitists, we think, in St. Ann's Square at that time; but we cannot recall their names.

W. H. M (Croydon).—The defect in your prints is imperfect fixation; and looking at the circumstances, we have not much hesitation in pointing to the cause: it is simply due to the exceedingly cold weather. We have often pointed out the fact that on a sudden fall in the temperature the ordinary hypo bath performed its office imperfectly. In such cold weather the solution should be warmed to a temperature of at least 50°, or from that to 60°. The same cause, inducing severe bronchitis, delayed the Editor's answer to your question.

H. H. SUNDERLAND.—A "formula" for enamelling is of no service without instructions, and these would occupy more space than we can devote to the subject in "Answers to Correspondents." You will find instructions in almost all our YEAR-BOOKS for some years past. In that for 1878 you will find instructions on p. 128.

NEGATIVE.—Almost every retoucher has his own especial method of preparing the surface of the negative so as to secure a tooth. Many, when they have the negative varnished with a hard spirit varnish, rub with a little powdered resin on the end of the middle finger until they have slightly dulled or roughed the surface of the varnish, which then presents a good tooth to the pencil. Some use a little turpentine in manner similar, instead of powdered resin. The majority, we believe, prefer a matt varnish. Such varnishes are various. The following is said to be good:—1 ounce alcohol, 4 ounces benzole, and 8 ounces ether, with about one-third of an ounce of gum mastic dissolved therein. This should be applied cold. And we should prefer the negative to have received a coating of very dilute gum water or gelatine, to avoid risk of injuring the collodion film.

B. R. S.—The primary cause of the grey tone and feeble character of the prints is the weakness of the negatives. With a feeble negative you cannot print sufficiently deep to get rich black tones; and in the attempt to secure such tones, you only secure flat prints, which are grey instead of black.

ARCHITECT.—The method of M. Pellet, by which direct prints in blue lines may be produced from a drawing, was described several times in our last volume. It is briefly as follows:—The sensitizing solution is composed of—

Oxalic acid...	...	...	...	5 parts
Perochloride of iron	...	...	...	10 "
Water	...	...	...	100 "

This solution can be modified according to the sensibility required. The oxalic acid can be replaced by any of the other vegetable acids. If the paper has not been sufficiently sized, gelatine, gum, isinglass, or dextrine can be added to thicken the solution. When dry, the paper preserves its sensibility very well, which sensibility is very great. In order to reproduce a map, a sheet of sensitized paper is placed under the map, and if in summer and in the sun, fifteen to thirty seconds is sufficient to decompose all the parts not protected by the black lines. By the action of the light the salt of iron is reduced into protoxide. This salt is not acted upon, as the former, by a solution of yellow prussiate of potash, therefore those parts protected by the black lines turn blue. After exposure, the paper is plunged into a bath of prussiate (15 to 18 per cent.), and immediately the design appears in blue. The paper is then rinsed in cold water, and plunged into a bath of chlorhydric acid (8 per cent.), in order to dissolve out what may remain of the protoxide, and to whiten the paper; the proof is then washed, and left to dry.

HOLLOWAY.—The most frequent cause of oyster shell markings is in the collodion, not in the nitrate bath, although certain conditions of bath will conduce to the result. But the most common cause is the use of a collodion giving a horny repellent film. Increased age in the collodion will cure this, as will the addition of a portion of a ripener and more powdery collodion. Sometimes the addition of a drop or two of distilled water to an ounce of collodion will effect a cure. 2. No; we prefer iodide of potassium. 3. As a rule it is only necessary to add a few drops of a plain solution of chloride of gold. At intervals it is desirable to add fresh solution made as the original bath was. An old bath generally tones slower and better than one newly mixed.

ROGER LAURENT.—Many thanks; in our next.

The Photographic News, January 24, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PYROXYLINE AND ITS KEEPING QUALITIES.—MANCHESTER IN THE CAMERA.—PHOTOGRAPHIC ILLUSTRATIONS IN OUR BOOKS.

Pyroxyline, and its Keeping Qualities.—The discussion at the last meeting of the Photographic Society of Great Britain, touching the best means to preserve pyroxyline, will be read with interest by all those who are in the habit of preparing their own gun-cotton or their own collodion. Pyroxyline is very apt to emit acid fumes when kept in a dry state, and the giving off of these fumes, it must be remembered, is a sign of incipient decomposition. The employment of an alkali may be of use to begin with, to prevent the decomposition from being set up; but when once the material has begun to decompose, all the care in the world will not cause the gun-cotton to return to its original condition. A fuming pyroxyline, if you cannot employ it at once, is little use to keep. Moreover, it is a dangerous substance, and one that is well outside the photographer's laboratory. Our advice is to employ your pyroxyline always as soon as you can, and to keep in water any quantity you may have in stock. When military gun-cotton was first introduced into this country from Austria, an alkaline carbonate, in small quantities, was sprinkled over it, and the Austrians themselves took the precaution to dip the stems into a silicate, so that they might be covered with a coating of soluble glass. But none of these measures proved so effectual as the keeping of the samples in water or in a damp condition. There is, moreover, the great advantage that damp gun-cotton is inexplusive—nay, actually noninflammable—under ordinary circumstances. A fire in a house which contains wet gun-cotton would be a source of no danger at all so far as the pyroxyline was concerned, for this would simply smoulder, or burn by degrees as it got dry; but pyroxyline in its ordinary state would be exceedingly dangerous under such circumstances. In regard to military gun-cotton, which is very like photographer's cotton, this is found to keep its properties for years in a damp state, the generation of red fumes being almost unknown. The cakes or slabs of gun-cotton pulp—for it is in this form that the military authorities keep their pyroxyline—are stored in the magazines for years without any particular care, the only precaution taken being to examine the material periodically to ascertain if it is impregnated with a sufficiency of water. The gun-cotton sometimes becomes mildewed, and shows other exterior signs of long-keeping; but these have no material effect upon its properties as an explosive agent. The mildew is simply wiped off, and the wet slabs allowed to remain as they are. Of course, military gun-cotton is not absolutely the same as the photographer's gun-cotton. While the latter is wholly soluble in an ether and alcohol mixture—or, at any rate, should be so—the military substance is only soluble to the extent of ten, or at the most fifteen, per cent. Indeed, one of the methods for testing military gun-cotton is to wash it with ether and alcohol, and if it sustains a loss greater than the above, it is rejected. At the same time, it will hardly do, perhaps, to argue that what holds good with military pyroxyline may be taken for granted in the case of the soluble material. There is little doubt, we fear, that the photographer's pyroxyline is rather more unstable than the other. The difference in composition lies in the quantity of nitrogen that the two materials contain. Military gun-cotton is termed by chemists tri-nitro-cellulose, because it contains three atoms of nitrogen, whereas the photographer's cotton, which has but two, is called bi-nitro-cellulose. The latter would seem hardly so perfect a substance as the tri-nitro-cellulose, as far, at any rate,

as keeping qualities go, for certainly the issue of red fumes is more rife among samples of soluble than insoluble cotton. As we have said, however, we advise photographers to dissolve their pyroxyline as soon as possible, and keep it in the form of collodion rather than as pyroxyline; but if the material is to be stored, let them keep it impregnated with water, which has the effect not only of rendering the substance innocuous, but also of preserving it from decomposition. Warm weather acting upon dry pyroxyline in stoppered bottles is very liable to set up decomposition.

Manchester in the Camera.—A new book, which the *Athenæum* says is to be paid for by subscription, is shortly to appear, entitled "Manchester as It Is." The chief feature of the work will be a series of forty photographs representing the city at the present day, the pictures in question being printed in permanent pigments from negatives by Mr. Alfred Brothers. The photographs represent the salient points of Manchester, its public buildings, and prominent thoroughfares, and will consequently be a true and valuable reflex of the city at the present day. It is a pity, as we have several times pointed out in these columns, that the representation of our cities, and of London especially, by means of the camera, is not more frequently undertaken. There is, we are glad to see, an association formed for securing photographic views of "Old London," and many of the relics that are disappearing from our midst have been secured, so that a truly historical record of them may be preserved; but Manchester seems to be the first to consider a series of such photographs worthy of publication in a collected form. In London we might bring out two such works, "Old London," and "New London," the one to contain views of such buildings as remain to us from the last century and previously, and the other to represent what might be termed Modern London. In the first would be included views from some of the old houses still to be found in Holborn and Wych Street, pictures of the waterside taverns that still exist in Wapping, and of the inns and courtyards in the Borough, that remain to us as a remnant of the old coaching days, together with such of the public buildings and city squares which still retain their antiquated character. To illustrate modern London would not be so difficult, and a selection of photographs showing our new public buildings, broad streets, and open squares should find plenty of purchasers, if the work were well and tastefully got up. In the case of the Manchester book, we hear only two hundred and fifty copies are to be printed, so that others but subscribers will find it hard to get copies.

Photographic Illustrations in our Books.—Messrs. Sampson Low and Marston, who have identified themselves with the publication of books illustrated by photography, are issuing a volume by Mr. F. G. Heath, entitled, "The Fern World," with which the camera has had much to do. Mr. Heath's name is so well known in connection with ferns and their culture, that little need be said of the letterpress of the volume, and he has been wise enough, in order to secure pictures of fern gardens in nature, to employ the camera to transcribe them to his book. In some cases the photographs have been employed for drawing from on wood; in others, the reader has the camera picture itself before him. The fern studies chosen are exceedingly beautiful, and add a great charm to Mr. Heath's delightful book. Of Mr. Thomson's book on Cyprus, which Messrs. Sampson Low are also to publish, we have heard nothing lately; many of the photographs our readers may doubtless have already seen, for they were exhibited for some time at the Pall Mall Exhibition in November, and they certainly convey the best idea that has yet been given to stay-at-homes of the newly-acquired province. But Mr. Thomson and his publishers must make haste with their book, or the public will have lost much of their interest in Cyprus and Cypriotes.

ON THE FADING OF THE UNDEVELOPED PHOTOGRAPHIC IMAGE AND ON SOLUBLE BROMIDE IN EMULSIONS.

BY CAPTAIN W. DE W. ABNEY, R.E., F.R.S.*

I must apologise to the members of the Society for reading before them what may appear a rather theoretical paper, but I venture to submit that it is only by looking at every side of a question that we can arrive at the great desideratum—truth. I will bring forward to-night some thoughts regarding the shortcoming of emulsions in one respect, and suggest what is its cause. Perhaps I shall be rather discursive, but at all events I shall avoid giving “an interesting paper,” to do which, according to a certain distinguished Professor, I should have to commence with the Deluge, give a passing glimpse at the undulatory theory of light, whilst the peroration should contain allusions to the microphone.

In collodion processes we are far too apt to forget the vehicle with which we are dealing, viz., collodion itself. We are all, as a rule, particularly careful about the purity of our silver compounds, but are very apt to neglect the body in which they lie, unless it be to pay attention to the physical nature of the film itself. Regarding the chemical aspect of the film, beyond the silver salt which it contains, no sort of heed is paid, and in such an omission I think I can show that we run a serious chance of introducing one source of fading of the photographic image. It is not many years since that I had to order in a large stock of chemicals for Government, to fit up our photographic wagon, which is intended for field service. On the principle that the Controller of Stores at the Arsenal at Woolwich must have a sealed pattern of everything which he may have to issue (a most excellent plan in most cases, but hardly necessary in this), this supply of chemicals was obtained for his guidance.

Not very long ago, when there were rumours of war, a new photographic wagon was to be completed in its equipment, and the sealed patterns were produced to govern the supply. All the chemicals had suffered no deterioration except one, and that was the pyroxyline. Had the new supply been obtained according to the sealed patterns, photography would have had but an indifferent issue. The bottle containing the pyroxyline was filled with dense red fumes, and had evidently begun to decompose, giving off nitrous acid fumes. The collodion made with it in this decomposing state would evidently not be up to its normal quality. I was asked by an officer if, like explosive gun-cotton, it could not be kept wet, or even immersed in water. Fortunately, I was able to give him an assurance that it might not, for I had vivid recollections of a large supply of pyroxyline which had come back from the Transit of Venus expeditions, and had been kept in water, that had gone on decomposing for a couple of years, till it became nearly insoluble in the usual solvents. All photographers are aware that frequently when adding colourless, or nearly colourless, iodizers to plain collodion, there is, in some cases, an immediate production of free iodine, which may, or may not, be subsequently absorbed. The cause of this is often laid to the door of the solvents, and it may be so; though I doubt not that the impurity of the solvents (for they must be acid to liberate free iodine) has often been caused by the decomposition of the pyroxyline and the liberation of the nitrous acid. Of one thing, however, I am certain, and that is, that pyroxyline, after being dissolved up, is still liable to go on decomposing if nothing but ordinary solvents be used. I do not intend to imply that a developed film will decompose; but that a film which is not developed may go on decomposing and liberating nitrous acid, if the original pyroxyline has a tendency to decompose. In a washed emulsion plate without any preservative, how does the matter stand? It stands thus, that if a film has been exposed to light in the camera the image will fade, for I have already shown, in a previous paper, that this nitrous acid *destroys the photographic image*. I will recount one experience of this. I prepared several

emulsion plates without preservative, and during my absence from town in October, and about a week before my return, they were exposed to the spectrum. On coming back I immediately tried to develop them, but found that the image had entirely disappeared; there was not a trace of it. On seeking for the cause, I could not lay it to oxydation, as I often had kept emulsion plates for a much longer period, and found that they were always capable of development. In examining my pyroxyline I found that it was in a state of decomposition, as evidenced by the smell of the nitrous fumes. I exposed the whole of the cotton to the air till no trace of the smell remained, then replaced it in a clean bottle and placed it in a test tube containing a solution of potassium iodide. In a couple of hours the presence of the iodine was abundantly proved, showing that the decomposition was still going on. An exposure of a plate inside the bottle for twenty seconds nearly obliterated the photographic image. Here, apparently, was the cause. Another experiment seemed incumbent. A plate was coated with the emulsion, dried, and placed in a pure atmosphere in contact with starch paper; after a short interval, iodine from the potassium iodide was liberated. Here, then, we have one cause of the fading of the photographic image by the use of impure pyroxyline.

Now, I do not wish to insinuate that the pyroxyline had been improperly washed; I believe it had been well washed; but it happened, as is the case with the explosive gun-cotton, that spontaneous decomposition had set up, and by—for want of a better term I will call—catalectic action the whole mass was in a state of change.

It is curious how one experiment suggests others. After I had carried out these, it occurred to me that it was quite possible to cure the evil, and even utilise the action. I will describe my experiments, which can be repeated by anybody to be confirmed or disproved.

The question I asked myself was, On what does sensitiveness depend? It must depend on the ready absorption of the liberated halogen, and probably on nothing else. It then struck me, if I were right in my surmise, that in such a case an excess of an alkaline or monad bromide in an emulsion should not diminish sensitiveness, or rather, I should say, should not prevent a photographic image being formed which is capable of development, provided I supplied the film with some bromine absorbent. What so natural as a nitrite or sulphite of an alkali? The experiment was carried out in my dreams one night, and really executed the next day, and with perfect success in both cases. Fancy and reality went, for a wonder, hand in hand, and did not contradict each other. In these two plates I can show you the result of the experiments. I had a simply washed emulsion prepared with an excess of silver nitrate. I took some of it, and added to each ounce three grains of potassium bromide. I coated the plates with it, and over one half I poured a dilute solution of potassium nitrite in alcohol, but carefully avoided returning any to the cup, in order to prevent the bromide being carried off the plate, and thus affecting the result. The film was then dried and exposed, and developed with ferrous oxalate. Now note the result: the part over which the bromide alone existed is absolutely devoid of any trace of an image; but where the nitrite had obtained a footing, along with it the image is developed perfectly, and I may say, that it came out rapidly. With sodium sulphite the same result was obtained. Now, as to sensitiveness, I wish to speak more guardedly. I do not think that the presence of free soluble alkaline bromide does affect rapidly. Here I have a plate, the whole of one surface of which was coated with ordinary emulsion, one-third was dipped in a solution of potassium bromide alone, another third in a solution of potassium bromide and potassium nitrite, and was then dried. Exposed behind a negative, it will be seen that the detail is equally well defined on that part of the film on which the soluble bromide and the nitrite was dried, as on that in which the film remained in its original state; whilst on that part to which

* Read before the Photographic Society of Great Britain.

the bromide alone had been applied, the image was exceedingly feeble, and almost refused to develop. I would have you also remark that the densities of the first two portions are almost identical—in fact, it is hard to see the line of separation between them.

(To be continued.)

ON AN INSTANTANEOUS SHUTTER.

BY COL. STUART WORTLEY.*

In showing my instantaneous shutter, I may remark that these two specimens are unnecessarily long, owing to being made to cover certain extra large lenses. In all ordinary cases they do not project beyond the sides of the camera. The larger one is used on a camera fifteen by thirteen, the smaller on one seven by seven. I find it necessary to use an instantaneous shutter with the highly sensitive gelatine plates, and I originally used what is known as a drop or guillotine shutter; but in using it I found that the sky was much over-exposed, and it struck me to avoid this by designing a shutter to work horizontally. I am thus enabled to use two butterfly wings, with which I decrease the size of the exposing slit at pleasure, and with the great advantage of so shaping the opening as to give a far longer exposure to the foreground than to the sky. Thus in this picture which I show, you will see that the exceedingly short exposure it received has prevented any of the halation or blocking of the lights so often seen in cloud pictures, and that the clouds round the sun, and the sun itself, are perfectly clear and distinct.

You will notice that the shutter is quite independent of the camera—it can be made and fitted to any camera by merely sending the front to the maker, it having a false one, and can be taken on and off in an instant.

Mr. Collins, of 56, Cochrane Street, St. John's Wood, has made these for me to my designs, and I have to thank him for the care bestowed on their get-up.

I may here, for a moment, point out a curious thing in carbon printing. You will see a number of clear specks. These are due to the transparency, while wet, being caught by the frost, the little holes appearing after it was thawed.

One point regarding the development of dry plates. I have often pointed out, in papers read before the Society and in other writings, the necessity for a minimum quantity of pyrogallie acid being used at first. If this is done you get a delicate and very perfect negative. But if you use strong pyro at first, you injure the negative. Use very strong ammonia and very little pyro, then add pyro afterwards, according to the density you require. I am also anxious again to call attention to the absolute necessity of using a sufficiently non-actinic light in preparing and developing highly sensitive dry plates.

I here show a piece of deep ruby glass. I have printed in twelve minutes, by the light of a paraffin lamp, a perfect transparency through this piece of glass, and I do not know how to call your attention more forcibly to the advice given in the preceding paragraph.

COPYRIGHT IN PHOTOGRAPHS.

The following, referring to the clumsy construction of the present Art Copyright Act, appears in the *Times*:—

Sir,—If we are to have fresh legislation on this subject, let us hope we shall have something more reasonable than the language of 25 and 26 Vic., cap. 68, which, after (section 1) vesting copyright in works of art made or sold after that date in the author for his life and seven years after his death, goes on to say, "provided that when any printing or drawing or the negative of any photograph shall, for the first time after the passing of this Act, be sold or disposed of, or shall be made or executed for or on behalf of any other person for a good or a valuable consideration, the person so selling or disposing of or

making or executing the same shall not retain the copyright thereof, unless it be expressly reserved to him by agreement in writing signed at or before the time of such sale or disposition by the vendee or assignee of such painting or drawing or of such negative of a photograph, or by the person for or on whose behalf the same shall be so made or executed, but the copyright shall belong to the vendee or assignee . . . or the person for or on whose behalf the same shall have been so executed." Had the enactment stopped here, the matter would have been rational enough, but it goes on—"nor shall the vendee or assignee thereof be entitled to any such copyright unless at or before the time of such sale or disposition an agreement in writing, signed by the person so selling or disposing of the same, or by his agent duly authorized, shall have been made to that effect." Would it not have been simpler to say (what is said in effect by this circumlocution), "Unless at the time of sale of a painting, drawing, &c., an agreement is made in writing as to who is to have the copyright, vendor or purchaser, there shall not be any copyright at all?"—I am, sir, yours obediently,

JOHN CORYTON.

The Temple, January 16th.

The following letter subsequently appeared in the same journal:—

Sir,—The copyright question so frequently crops up in the *Times*, thereby evincing an unsettled affair, that it is hoped it may be finally disposed of next Session.

As a member of the Copyright Committee of the Society of Arts, at whose suggestion the late code was adopted (though that code was much curtailed by the law officers of the Crown), I write, having since assisted at the Antwerp Congress of 1877, where most nationalities were represented, and again in Paris last year, when the subject was very fully discussed, the committee, which was a very large one, composed of all nations, sitting each morning at the Louvre and in the afternoon at the Trocadero. This committee, which was at first presided over by the Minister of the Fine Arts (I need not tell you, never an artist), and after by M. Meissonnier, with M. Huard, of the Cour d'Appel, as secretary, has now made its report, which I believe may be purchased, and which should be studied before the Royal Copyright Commission's suggestions become law. As the only representative of Great Britain, I had to argue unsupported. The General Assembly unanimously ratified the proposition of the committee that works of arts should protect themselves—that the artist should lose nothing, there should be no registration or reservation of copyright at time of sale, the author's work requiring no signature or evidence other than itself, which I strongly maintained could be easily identified by experts. I dissented strongly against the prolongation of the term of artistic copyright to a hundred years! But as it was intended to benefit the artist's family, and took in the poor musician, I voted also for this, which, I believe, will become international French law. Most of the representatives have made reports to their Governments, and I have reason to believe the French Administration will communicate with ours upon the subject, if they have not already done so.—Yours, &c.,

Royal Institution of Great Britain.

JOHN LEIGHTON.

PHOTOGRAPHIC ENGRAVING.

BY CAPT. J. WATERHOUSE, B.SC.*

Woodburytype Methods.—It has already been shown that in the Woodburytype process the photographic image is impressed into a soft metal plate by means of a relief in insoluble gelatine on a collodion support, and that instead of impressions being printed in ordinary printers' ink they are made in coloured gelatine. In such prints the gradation of shade is continuous, and there is no perceptible grain.

Mr. Woodbury has proposed an ingenious method for obtaining gelatine reliefs with a granular surface, so that, when impressed into soft metal, electrotypes in copper may be obtained from the latter, which will serve as printing-plates for printing with printers' ink in the copper-plate press, and yield superior results to those obtained by electrotyping immediately from the gelatine relief.

A plate of glass is waxed and coated with a thin film of

* Read before the Photographic Society of Great Britain.

* Continued from page 27.

collodion, and a mixture of gelatine and bichromate of potash, containing a quantity of fine emery, powdered glass, or charcoal, is poured over it and allowed to set. The gelatine film is then dried and taken from the glass, and the collodion side exposed beneath a negative. After a sufficient exposure, it is temporarily attached, on the collodion side, with india-rubber solution, to a sheet of glass, and washed in warm water.

The resulting granular image is then pressed into a sheet of soft metal by means of the hydraulic press. The soft metal plate has an electrotpe made from it in copper, and another plate, subsequently covered with a coating of iron, is again made from this to serve as the printing plate, the first copper plate being kept as a reserve.

Mr. Woodbury also describes another method which in some respects resembles Geymet's, before described.

Paper is successively coated with three or more mixtures of gelatine, bichromate of potash, and some granular substance in different degrees of fineness—first with the coarsest, and lastly with the finest. When dry, the tissue is exposed under a negative, transferred under water to a finely polished plate of zinc or steel, then washed in warm water as usual, and when dry is ready for pressure into the soft metal block. In this case the light tones are composed of the finest grains, and the shadows of the coarsest.

M. Rousselon, the manager of Messrs. Goupil's photographic works at Asnieres, near Paris, has obtained engraved plates with remarkably good half-tones by a process somewhat similar to the Woodbury-type, which is also largely worked by Messrs. Goupil. The peculiarity is in the grain, which is obtained by the addition to the sensitive mixture of gelatine and bichromate of some substance which has the property of causing the film to become granular under the influence of light, the granular effect being increased in proportion to the intensity of action of the light. The other operations are the same as in the first of Mr. Woodbury's processes just described. The details of this process are a secret, but it is said that the substance used for producing the grain is chloride of calcium.

I am not aware of either Woodbury's or Rousselon's processes being utilised for the reproduction of maps, but in certain cases they could, no doubt, be usefully employed. The only difficulty seems to be that an immensely powerful hydraulic press is required for large subjects.

Photo-mezzotint.—The Editor of the *British Journal* has lately suggested a process of photo-mezzotint engraving founded on the dusting-on or powder process, already alluded to. A polished steel plate is thickly coated with—

Saturated solution of bichromate of ammonia				
ammonia	...	..	...	5 drachms
Honey	...	...	...	3 "
Albumen	...	...	...	3 "
Water	...	...	...	1½ pint.

When the coating is thoroughly dry, the plate is exposed to light under a transparency. A large camel's hair brush is charged with a mixture of the two finest kinds of emery powder, and applied with a circular whisking motion all over the surface. The powder attaches itself to those parts of the plate on which the light has not acted, precisely in proportion to the amount of protection they have received, owing to the unaltered parts of the film attracting moisture and becoming tacky. The most tacky parts, forming the deep shadows of the picture, will attract the coarsest particles of the emery, the finer parts will take finer emery, and the highest lights will take none at all. When the picture is fully developed, it is placed face to face against a polished plate of softer metal, and passed between a pair of rollers, so that the emery powder image may be indented into the polished metal. The plate is then burnished in parts by a skilled engraver, and when the desired result is

obtained, is printed in the usual way in the copper-plate press.

This process seems capable of rendering useful service in the reproduction of maps.

Scamoni's Method.—The last method is that recommended by Herr C. Scamoni, of the Imperial Russian State-Paper Office, and is fully described in his "Handbuch der Heliographie," already referred to. The results are exceedingly good, but the process is only suitable for line work.

Herr Scamoni, having obtained a suitable negative of a drawing or other line subject, makes a positive copy of it in the camera by the wet collodion process, and after fixing, treats this positive with various successive intensifying solutions, so as to give it a very sensible relief. After drying the plate is varnished with a thin varnish and coated with fine plumbago, after which it is electrotyped in the usual way.

In the specimens I have seen of this process the lines are exceedingly sharp and fine, and it would seem well adapted for map-work.

A photo-mechanical process has lately been introduced by Messrs. Aubel and Kaiser, of Lindenhöhe, near Cologne, and called "Aubeldruck." The results for line-work are very superior, but the process is a secret. It is believed to consist in some method of etching a glass negative, so that prints may be obtained direct from the glass surface or by transfer to stone.

In all cases where the printing-plates are obtained by electro-deposition of copper, and many copies are required, it is necessary to protect the engraved surface of the plate with a coating of iron by the process known as 'acierage,' or steel facing. This enables a very large number of copies to be printed without deterioration of the plate, and the coating can easily be removed and renewed whenever required. Details will be found in Ure's "Dictionary of Arts, Manufactures, and Mines," article Engraving.

(To be continued.)

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

In his next chapter the author proceeds briefly to describe the properties of isinglass and of agar-agar. With respect to the former of these, he remarks it can only be obtained of very unequal, and generally of very inferior, quality; it is therefore much better always to use gelatine. For collotypes, also, isinglass cannot be used, as it is soon crushed under the press.

A vegetable gelatine, the product of a sea-weed—agar-agar—is also found in the market. This substance is not so soluble as gelatine; a jelly made with half per cent. of agar-agar is firmer than one made with four per cent. of French gelatine, and can be heated to from 30° to 50° C. before it begins to melt. It is not sticky, and is free from nitrogen. For collotype purposes the employment of this vegetable gelatine is attended with difficulties on account of its insolubility in anything but very hot water; but it may be used as an adjunct to ordinary gelatine, to which it gives greater firmness. More especially in tropical climates its application in this way for carbon printing and the collotype process has been recommended.

The author now proceeds to describe the behaviour of a quite different kind of substance—sugar—with the chromates. He first explains the action of light on a mixture of cane-sugar with chromic acid and the different chromates of the alkalies. Chromic acid oxidizes sugar very rapidly, turning it brown even in the dark. Potassium bichromate mixed with a syrup of sugar can remain for

* Continued from page 26.

weeks without alteration, if kept in the dark, and when exposed to the light it turns brown very slowly. The mixture with sugar is in every respect much less sensitive to light than with gelatine. Chromated sugar that has been thus affected has not lost its solubility; it must be exposed to light for some weeks before it is so far decomposed as to give chromium chromate in excess. The latter, then placed in water, remains undissolved, so that it cannot be asserted that sugar is rendered insoluble in water by the bichromate; but the action of light causes it to lose its hygroscopic properties, for in the parts that have been exposed to light products of oxidation and salts of chromium are formed, which have no tendency to absorb water.

In order to determine the chemical action that light produces on a mixture of sugar and potassium bichromate, the author undertook a series of elaborate experiments. Concentrated and saturated solutions of the two substances were mixed and evaporated at the ordinary atmospheric temperature, and then exposed to direct and full sunlight for between three and four weeks. During this time the mass was often stirred and comminuted, and at the end of it had turned of a brownish black colour. A portion of it dissolved in water, and acidulated with acetic acid, was tested with calcium chloride for oxalic acid, but without result. From another similarly prepared portion the chromic acid was removed by barium nitrate, the filtrate neutralized with ammonia, reduced by evaporation, and mixed with lead nitrate. Again no precipitate was produced, proving the absence of saccharic acid.

Having shown that the chromated sugar does not, under the action of light, form either oxalic or saccharic acids, the author next adopted another method of proof. He took another portion of the substance, precipitated the chromic acid with baryta water, and distilled the filtrate with dilute sulphuric acid. A dark and acid liquid distilled over abundantly, possessing the well known smell of formic acid. This liquid was then saturated with lead carbonate, and after filtering and evaporating it yielded brilliant and transparent prismatic crystals, insoluble in spirits of wine. The amount of lead in these crystals, determined by a quantitative analysis, gave precisely the same results as lead formate. We conclude, therefore, that sugar and potassium bichromate, when acted on by light, produce formic acid. It has long been known to chemists that this acid is one of the products from the action of potassium bichromate and sulphuric acid on various organic bodies under the influence of heat. Now, therefore, we know that mixtures of the chromates with sugar, gelatine, gum, &c., when exposed to the light, produce a double basic chromate and formate of chromium, and the chromium oxide, as we have seen in the case of gelatine, gives rise to secondary phenomena, such as insolubility.

It has been already mentioned that the chromated sugar, when acted on by light, loses some of its hygroscopic properties, and more especially is this the case with grape sugar. Advantage is taken of this property in the dusting-on process. A plate is coated with a mixture of gum and sugar with potassium chromate, and exposed to the light. If now the image thus formed be breathed on and dusted with powdered graphite, it will be found that the powder adheres only to those parts that were protected from light. For this purpose grape sugar, as has been above stated, is preferable to cane sugar; honey and glycerine can also be employed with advantage, but neither gives such good results as grape sugar. The phenomenon is explained on the theory that the sugar, or grape sugar, is reduced by oxidation to formic acid, which, with the chromic oxide produced at the same time, forms a basic and weakly hygroscopic salt. It must be noticed, however, that the exposed parts of the chromated sugar film have not lost their capability of attracting moisture altogether, but that they possess that capability in a less degree

than the parts that have not been altered under the influence of light.

The monochrome of potassium mixed with sugar may be exposed for months to the light without undergoing any alteration worthy of notice. We have here the same want of sensitiveness as in the case of gelatine. The double chromate of potassium and ammonium gives with sugar very sensitive and durable films, which, however, are not in use. Chromated sugar may be used alone in the dusting-on process, and pictures obtained on it, but they are very liable to injury, and the process itself is uncertain. Sugar is often added to the gelatine in both the colotype and carbon processes, but for the former purpose its use is not recommended, as it makes the gelatine soft, and liable to crushing under mechanical pressure.

In photo-electrotypy the addition of sugar is strongly recommended by the author, on account of its promoting the solubility in hot water of the gelatine not acted on by light. Its operation in this way, however, is not photographic, but mechanical, for the influence of light on the chromated gelatine has ceased before that on the chromated sugar comes into play. Its use in the carbon process has also been advocated, because of its giving the paper a certain suppleness and pliability, but as the sugar dissolves in the chromate bath when the paper is sensitized, it promotes the decomposition of the latter. According to Johnson, when sugar is contained in the gelatine film the carbon paper is more easily acted on by a dry or a moist atmosphere; in dry weather it turns brittle, and sometimes the gelatine film becomes so soluble as to dissolve in the chromate bath, even at ordinary temperatures. For these reasons it has been proposed to substitute soap for sugar; on the other hand, Cooper advocates the addition of glycerine. The author, however, remarks that sugar dissolves with difficulty in the alcoholic chromate baths that are now so commonly used, whereas soap is highly soluble in the same, so that pollution of the bath is more to be feared in the latter case. Waterhouse also recommends the addition of soap to the film in colotype printing.

(To be continued.)

SPECTRUM PHOTOGRAPHY.

THE following appears in the *Times* in continuation of the correspondence we published last week:—

SIR,—It has been said by somebody that if people who take opposite sides in a discussion were to nod and distinctly what they were going to oppose, half the discussion would be avoided. When my learned and gallant friend Captain Abney takes exception to my strictures on a statement in the *Times* relative to Vogel's theory of stained films, I am at a loss what to reply until I know whether he means to say that stained photo-sensitive films acquire a susceptibility to lines in the spectrum according to their imparted tint (dye)—i.e., a film stained red registers red lines; one green the green lines, &c.—or not. If he maintains a relation of law between the colour of the dye and the lines it will photograph, he affirms Vogel's theory, which I maintain to be without foundation in principle or practice; if, as I read his note to the *Times*, he disputes Vogel's theory, we are at one, and there can be no discussion on that ground. It has long been shown that various organic and non-organic substances are susceptible in various degrees to the different colours of the spectrum; but definite chromatic correspondence between the two classes of variation is, so far as I have been able to learn, entirely contra-indicated by the experiments hitherto made.

The subject is one which will not interest largely the readers of the *Times*, but it would be of the highest importance to the science of photography if Vogel's theory were shown to be valid, as it must revolutionize the practice of photography. It is, in my opinion, on the contrary, one of those things odious to lovers of sound induction—a theory shaped out of a conjecture, with facts tortured to testify to it, and the multitude of opposing facts put out of sight.—Yours truly,
W. J. STILLMAN.

Florence, January 16th.

The Photographic News.

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THE PHOTOGRAPHIC USE OF OXALATE OF IRON.

As a rule we do not think it expedient to intervene in discussions maintained in our pages by correspondents. But there are times when controversy may be shortened by the mention of a few facts which seem to be lost sight of by the disputants on both sides. The fact that certain salts of iron were reduced by light to proto-salts was known at a very early period, is tolerably clear, and it was also known that the oxalate was of this number. So far as any evidence exists, however, this reaction was only made available in producing images of platinum, silver, or gold.

The observation that light exercised a reducing influence on peroxalate of iron appears to have been noted by Döbereiner earlier than Hunt or Herschel. But the question arises as to the first process for producing pictures. Dr. Emerson Reynolds claimed this in a paper read before the Dublin Chemical Society in December 1861. He defended his claim of having introduced a "new process," on the ground that whilst the principles upon which it was based were known earlier, they had not been applied and formulated into a process. Dr. Phipson then pointed out that he had formulated a process nearly twelve months earlier than Dr. Reynolds, which he announced first in the *Moniteur de la Photographie*, and subsequently described in full in the *Photographic News*, January 14th, 1862. An important distinction here occurs, however. Dr. Reynolds' picture really embodied the old principles, and his picture consisted of reduced silver, whilst that of Dr. Phipson was an image of iron. So far as evidence exists, the latter was the first print produced by oxalate of iron, and without the aid of silver, gold, or platinum. It is worth noting, in connection with this subject, in the *Photographic News* of September 20th, 1861, Harry Napier Draper (the son, we believe, of Dr. Draper) describes some experiments with paper floated upon a solution of prussian blue in a saturated solution of oxalate of ammonia, dried, and exposed under a negative. The paper acquires a faint blue colouration. Washed in water, and treated with hydrochloric acid, the impression becomes intense. After washing and drying, and exposing to light, the image fades, but is restored in darkness. He had not time for further experiment, but suggests that a black or dark brown image of iron might be formed, and a new mode of printing obtained. We, with Captain Abney, would not doubt Dr. Draper's word, but in stating that he has produced photographs by aid of the oxalate of iron, he distinctly states that the images were formed in silver and gold.

PAYMENT IN ADVANCE.

PAYMENT in advance, it is manifest, is an imperative condition of many kinds of business. In relation to many matters involving small sums already fixed at their minimum rates, if their cost and trouble of booking, of subsequent making out of accounts and applying for them, the giving of credit included in all this, and the risk of loss were added, they would constitute a prohibitory tax on the business. Hence payment in advance has come to be a necessary condition of many trades. But this prepayment involves in its turn many inconveniences and risks, and is easily made available by dishonest adventurers as a means of swindling the trustful and unwary. Attractive advertisements, offering enticing bargains of various kinds, for comparatively small sums in stamps, frequently appear. Sometimes such offers are *bona fide*, but they are not unfrequently partially or completely swindles. In some cases there is no intention of supplying anything for the amounts sent. In other cases the article sent, or the work done, is so inferior, that unless payment had been secured beforehand, little chance would exist of obtaining it afterwards. Some cases—happily, not many—have been brought under our attention of late, in which announcements appearing in the advertising columns of the *PHOTOGRAPHIC NEWS*, demanding payment in advance for enlarging, colouring, &c., have issued in disappointment. In some cases, money and negatives have been sent, and no further communication has been obtained. In others, work has been sent in return which has been altogether unsatisfactory and useless. In such cases we are not unfrequently appealed to for further information, and occasionally the disappointed applicants imply that some sort of responsibility rests on the journal in which such advertisements appear. Of course, the fallacy of such a notion needs no serious disavowal. It is impossible that the managers of a journal can have responsibility for or knowledge of advertisers whose announcements are brought to the office, and their insertion paid for in advance.

Some weeks ago, we published a letter written by Mr. C. E. Elliott, cautioning provincial photographers against dishonest adventurers requiring payment in advance for goods announced. We print this week another letter from the same gentleman regretting that his last letter has been misconstrued by some, who have been induced to refuse prepayment to respectable established firms, for goods where the terms charged involved the necessity of such prepayment. Mr. Elliott explains that he did not, of course, suggest that photographers should in all cases refuse to pay in advance; but simply that they should make proper enquiries as to the standing and trustworthiness of dealers making such demands. Practically, Mr. Elliott suggested that common sense and common prudence should be used. Established houses of business are usually well-known, and references can be obtained, so that little risk can exist in forwarding money to them for a purchase; whilst individuals residing in the country, being unknown, can scarcely expect to receive goods without cash or satisfactory references. A tempting advertisement offering to supply some great bargain, issued by an unknown person, should be the subject of careful enquiry before money is sent. And in all cases it is better to build up mutual trust by commencing with small transactions, so that any possible failure in satisfaction may not involve serious consequences. In many cases prepayment is necessary, but with care in enquiry and obtaining references, no trouble or loss need ensue.

THE FORTHCOMING DRY-PLATE COMPETITION.

A QUESTION having arisen regarding the forthcoming dry plate competition as to one point left doubtful in the published condition, the following correspondence will

explain the uncertainty and its solution. Mr. Henry Cooper writes to us as follows:—

"DEAR SIR,—Although not intending to compete for the Paget prize, there is one point in the conditions which I should like to see cleared up. Three plates ready for exposure, 8½ inches by 6½ inches, are to be sent in, and two or more negatives. The question is, are the latter to be of fixed size, the same as the plates, or may they be of any dimensions?—Yours truly,
H. COOPER."

We at once forwarded Mr. Cooper's note to the committee appointed by the Council of the Photographic Society to make arrangements. Mr. Sebastian Davis, on behalf of the committee, wrote as follows:—

"In accordance with Mr. Glaisher's request, I reply to Mr. H. Cooper's query with respect to the size of the finished negatives to be sent in competition for the Paget dry-plate prize. The finished negatives may be of any size, as the printed conditions only specify 8½ inches by 6½ inches for the unexposed plates. The object is that the committee may be able to test all the unexposed plates with a given lens in the same camera, whereas the finished negatives are simply required as an evidence of the quality of the pictures produced by the photographer himself by the process described.—With kind regards,
yours faithfully,
T. SEBASTIAN DAVIS."

We hope that the opening sentence of Mr. Cooper's note does not imply a settled resolution, as we should regret to see a dry-plate man of such experience and skill as Mr. Cooper refrain from such an interesting and important competition.

IMITATION PORCELAIN TRANSPARENCIES.

WE have received from a correspondent, Mr. W. J. Anckorn, a pretty example of a simple mode of producing transparencies imitating porcelain or opal glass. The transparency is produced on plain glass and backed with albumenized paper, and, when glazed and framed or bound, is not easily distinguished from porcelain. Mr. Anckorn finds the production of such things a pleasant photographic occupation, which may be taken in hand during long evenings, daylight not being necessary. Here is his account of his mode of proceeding:—

"The first thing necessary to be done is to albumenize the plate, and when dry sensitize in the ordinary way. The albumenizing of the plate is to keep the collodion from breaking when taking the plate from the negative. After the transparency is printed and developed, it must be redeveloped with pyrogallie acid and glacial acetic acid. After that is finished, dried, and varnished, the next thing it will require is to be backed up with albumenized paper, and a glass the same size fixed at the back of the paper, and then bound all round.

"If you look at the picture sent, you will see by looking at it before the eyes it is almost like china. Portraits look first-class done this way, and we shall see a good many this summer, I hope."

A RELIABLE DRY-PLATE PROCESS.

BY HENRY COOPER.

IN last number of the PHOTOGRAPHIC NEWS a correspondent signing "Servant," appeals to me to give sundry items of information in connection with my recently published "reliable" dry process.

He has failed to obtain syrupy lactate of ammonia, and as many others may be glad to know where they can procure a good sample, I have pleasure in mentioning the fact that I have always found the lactate supplied by Messrs. Hopkin and Williams to be most excellent. Their address is, Cross Street, Hatton Garden, E.C.

Your correspondent then says:—"Next as to the emul-

sion. Seeing that the plates are washed and preserved in the ordinary way, would it not be as well to use the emulsion when ripe instead of washing and drying it; or is there any specific reason for the washing?"

In reply, I may briefly call his attention to one or two points. The primary object in washing the emulsion is to arrest the ripening process, if I may so term it, at the proper moment, and thus secure a large bulk of emulsion which will remain without further change. With some emulsions there would be no objection to using it for the preparation of plates as soon as ripe, provided the whole of it were used up at the time; and although I cannot recommend the method with my emulsion (not having tried it), I see no reason why it should not succeed, provided due care is taken to add some nitric acid to the first wash water, and then to soak the plates for some time in pure water, and finally rinse thoroughly before coating with albumen. I should, however, be inclined to imagine the film would have a tendency to blister and slip during the washing, on account of the large quantity of nitric acid which must be used. On the whole, I should advise "Servant" to carry out the process in its integrity.

I have left his first question until last. He says:—"1st. With regard to exposure. Of course it would be impossible to give any definite time, but some data might be given to go upon. On a fine day in May, for instance, to take a fine landscape with a No. 6 Portable Symmetrical lens with middle size stop, what time would be about right?"

It is almost impossible to give any *reliable* data for exposure, or even to state any degree of comparative sensitiveness which shall prove of practical use. The old-fashioned plan of stating that a certain process was so many times slower than the *wet* was a most fallacious one, considering the enormous variation in the sensibility of wet collodion plates as prepared by different individuals, and was also doubly misleading, unless the axiom be borne in mind that, as the strength of light *diminishes*, so does the difference of time required by any two plates of various degrees of sensitiveness *increase*, to the marked disadvantage of the less sensitive plate."

To explain my meaning more fully, I may state a case in point. Working a certain dry process against my wet collodion, I found the plates by the former required half as long again as the latter in a good light and with an open subject; but with a more feeble light, or for close subjects, the dry plate needed an exposure of five or six times the other, until at last a point was reached where even an exposure of one hundred times as much would fail to give an equal result. The rule just given explains a fact which has caused some astonishment among photographers. I refer to the statement that the newest and most sensitive gelatine plates, which in a good light may be five times as sensitive as a good average wet plate, require in a dull light an exposure only one-thirtieth or less what the wet plate would need.

This is a point which I tested very thoroughly some months ago. On a gelatine plate, which in a bright light was twice as sensitive as the standard process, I was able to obtain a fully-exposed negative with a moderate exposure, under conditions where the ordinary plate failed to give even a decent result with an exposure fifty times as long.

I mention these facts now to show your correspondent how unsatisfactory it is to attempt to give the data he requires.

I am always ready to help others to the utmost of my means, and I give a few jottings from my note-book in reference to the exposures of the pictures I exhibited last autumn, and trust these may prove sufficient guide for "Servant." I must, however, remark that the best way to arrive at an idea of the sensitiveness of plates prepared according to my method is to make a few, and expose one

or two as tests. Also I must call the attention of all those who propose trying my method to the statement I made that, by merely altering the proportion of pyroxyline in the emulsion, a really wonderful difference in the sensitiveness of the finished plates was made.

I hope to have more to say on this point before long, but must forbear writing about it now, and will conclude this letter with the jottings from my book.

"July 15th. View from Kuarsborough Bridge. Open subject. Bright light, 12.15 p.m. No. 7 Portable Symmetrical; largest stop. Twenty seconds.

"July 31st. Fountains Abbey. No great contrasts. Good light, 11.45 a.m. No. 7 Port. Sym.; stop No. 2. Eighty seconds.

"May 9th. Ivybridge; dark river bit, with bridge and foliage. Good light, 2.45 p.m. No. 5 Port. Sym.; largest stop. Three and a-half minutes.

"May 9th. River bit; trees against the light and near to the camera: dark foreground. Hard, bright light, 3.30 p.m. No. 7 Port. Sym.; largest stop. Five minutes.

"July 31st. Near Fountains Abbey. Open bright bit, with much distance, 10.30 a.m. No. 7 Port. Sym.; largest stop. Two seconds."

The first four entries refer to pictures which, perhaps, "Servant" may have seen at the last Exhibition.

THE CAMERA AND PLEASURE.

BY JAMES CHINN.

I READ in the columns of the NEWS, with feelings of sympathy, an article on the subject of unsteadiness of pocket-cameras. Now, mine is not a pocket-camera, but about the size of a very small portmanteau, measuring 16 in. by 10 by 10, and weighing 23 pounds. This may be considered heavy, but there is no changing box, but bellows-body camera, square cabinet size, the slides made to hold the plate vertically or horizontally. There are twelve of these standing, side by side, in the box, and the camera at one end. Alongside the slides is a square piece of wood, the top of the stand to which the legs are attached, with thumb-screws, and secures perfect rigidity. When travelling, I place two rubber bands around the legs; they are easily carried. Mine are 1½ inch by 1 inch at top, and lean down 18 inches, and 1 inch by 1 inch at the bottom. On the slides I place a good-sized focussing-cloth, and with the slides charged with coffee plates, all you have to do is to pitch your camera, focus, take up a slide, place it in the camera, expose, replace it in your box, and at your leisure be satisfied with developing something worth calling a negative.

If the above were made by an experienced hand, and of mahogany, it would be considerably smaller and much lighter, and still retain its rigidity. I made mine of New Zealand timber.

Blenheim, New Zealand.

A METHOD OF FIXING,

Upon Wood, Glass, or Porcelain, any Photograph, whether printed in pigments, gelatine, or silver; also of Destroying the Paper, or other Basis upon which the print rested, so as to obtain a clear image on the wood, porcelain, or glass.

BY ROGER LAURENT.

To do this, I employ the white picture varnish of MM. Soehnée frères. In the first place, the engraving or photographic print of whatever kind, is put into water for twelve hours, so that the varnish, when applied, may not penetrate it.

1. The picture varnish is poured upon a warmed glass plate in the same way as you collodionize. As this varnish does not dry immediately, there is time to perform the next operation.

2. The print is taken out of the water (without bubbles)

and laid upon a glass plate (face upwards). A sheet of blotting-paper is pressed upon the print to remove the superfluous water. In this condition, some of the same varnish is poured on like collodion. Then, care being taken to prevent bubbles, this varnished image is applied (face downwards) to the previously varnished plate. By means of blotting-paper, the image is pressed firmly down.

3. It is allowed to dry for three hours.

4. With the finger, or a piece of rag, or a sponge, you moisten and rub the paper backing until it is removed and the image begins to appear, taking care not to injure the latter.

5. As soon as the image appears clean and sharp, it is dried and covered with photographic varnish. Acidulated water will be found best for rubbing away the paper backing. It is a work of considerable patience.

Correspondence.

PAYMENT IN ADVANCE.

SIR,—It is a most difficult matter to steer clear for the interest of all.

The letter I addressed you some few weeks ago has been misconstrued, and some most respectable and trustworthy advertisers have complained that my letter has been the means of injuring them, as parties have refused to send their money till they have received the goods.

I did not intend for a moment to intimate that photographers should not send their money in advance, but only to make some inquiries, if they did not know the house, before thus sending.—Yours truly,

C. E. ELLIOTT.

PHOTOGRAPHY BY MEANS OF OXALATE OF IRON.

SIR,—The note you have been pleased to add to my former communication induces me to ask permission to say a few more words on the above subject. I am afraid that, in writing in haste, I did not state enough to show that I was justified in doubting the statement of "Historicus" as to Dr. Phipson being the first to obtain images by means of the oxalate of iron. I think by giving the manner in which Hunt relates the discoveries of the properties of the silver salts, it will be seen, by comparison with the list of iron salts already given in my last, that he makes distinction between the discovery of the photogenic and photographic properties in a way that justifies the assumption that he intends no such distinction to be understood in the case of iron salts. Thus, in the historical chapter already quoted, I find

Silver, nitrate of	...	Ritter	1801
"	(photographically employed)	Wedgwood and Davy	1802
"	with organic matter...	Herschel	1839
"	with salts of lead	J. F. Herschel	1839
"	chloride of	C. W. Scheele	1777
"	(photographically employed)	Wedgwood	1802
"	"	Talbot	1839
"	darkened and by-iodic salts	Fife and Lassaigne	1839
"	iodide of (photographically used)	Herschel	1840
"	"	Ryan	1840

It will be seen by this short quotation that Hunt has not lost sight of the distinctions to which you, Mr. Editor, have called attention; and I may ask, would not the person who claims to have been the discoverer of the properties of so many iron salts have made the same distinction in his historical list if there was any such distinction to be inferred? In fact, the work from which I quote gives formulæ in which many of the iron salts of which Hunt was the author (photographically) are used, e.g., the protosulphate, muriate, iodide, &c.; and it still appears to me

that "Historicus" is too positive in his statements. I submit that the most he can assert, without doubt, is that Dr. Phipson was the first, *within his knowledge*, that produced images by means of the oxalate of iron.—I am, sir, yours respectfully,
B. L.

SIR,—I have followed with much interest the discussion between my friend "Historicus" and Capt. Abney, as to the production of the first photograph by oxalate of iron. I published my process for producing a photographic picture by ferric oxalate in the year 1861; it appeared in the *Moniteur de la Photographie*, and subsequently in the *PHOTOGRAPHIC NEWS*, the *Technologist*, and in several other journals, both at home and abroad, under the title of "A New Process of Photography Without Silver." The proofs resembled silver prints.

When Capt. Abney shall have shown that either Dr. Draper or Mr. Hunt ever published a similar process before mine appeared, I shall be happy to yield my priority. At present he has not done so.—I am, sir, yours faithfully,
London, January 20. T. L. PHIPSON, PH D., F.C.S.

PS.—We all know that Herschel made use of the tartrates and citrates of iron, but not the oxalate; neither had his process any resemblance to mine, as my prints were imitations of silver prints fixed by hyposulphite of soda.

PHOTOGRAPHY BY ARTIFICIAL LIGHT.

SIR,—In consequence of the personalities contained in Signor Lombardi's letter of the 18th inst., I claim your permission to reply.

My contention with the Luxograph Apparatus Company is, that in spite of my refusal to order an apparatus from them, or to give them a testimonial, they published one written by Signor Lombardi, a member of this firm, which, as far as my name is concerned, is perfectly false; and Signor Lombardi, knowing all the facts of the case, has the assurance to justify himself and his Company.

Some years ago, wishing to give up photography as a business, I put an advertisement in your journal, stating my intention. In consequence, Signor Lombardi called on me. After a most grandiloquent introduction of himself, he told me the most amazing anecdotes of his mode of creating business. He boasted that there was not a man living who had his power of saying or doing *anything* to promote business, and finally he proposed to place his son, a young man who appeared to be about sixteen, but who may have been twenty years of age, with me as my partner! Treating the matter as a joke, I said, "What is the amount of his capital?" His reply was, "The clothes in which he stands upright, the valuable possession of my illustrious name, my mighty power of 'running' sitters in, and my enormous and exclusive interest in that excellent and voracious paper the *Daily Telegraph*." This proposal was received with excessive laughter. I certainly complimented him on his "great commercial abilities." But I added that rather than imitate his example, I would prefer to sweep a crossing. This was received as a high and graceful compliment by Signor Lombardi.

I do not expect this statement to be believed by anyone unacquainted with Signor Lombardi. Those who know him will, I am assured, give it implicit credence. All who know his work and mine will admit that it would be as reasonable to expect fire and water to unite harmoniously, as to expect his work and mine to assimilate. His assertion that I wished to form the firm of Lombardi and Faulkner is an example of his power of saying anything to carry his point.

In answer to his sneers about my plan of producing graduated backgrounds, allow me to say, that at his request I supplied him with four pounds of carefully prepared emulsion, in four tones of colour, and a clothes brush (that being the best form of brush for the purpose), and ample printed instructions. Had these materials been used with ordinary

skill, Signor Lombardi's photographs would have gained in effect; as it was, he lacked the necessary talent to use them, and this deficiency I could not, unfortunately, supply. Signor Lombardi has described the above materials as "a bit of chalk—a shoe brush," a striking instance of his power of truthful description.

I suppose I ought to feel flattered that so successful a man of business as Signor Lombardi should have allowed himself to be so strongly influenced by my remarks that he was induced to purchase from his own firm three complete sets of apparatus, or, to use his own words, "to go in deep."

Apart from my own feelings on the subject, I thought it was due to the character of your journal to inform you of the falsity of the "Luxograph Testimonial."—I am, sir, your obedient servant,
ROBERT FAULKNER.

[The correspondence on this subject must cease here.—ED.]

CADETT'S SHUTTER-FOCUSSING.

DEAR SIR,—If your correspondents just bore a hole in the camera-stand, any part most convenient, and when they wish to focus, just squeeze the pear, double the tube near it, and push the doubled part into the hole, they will find the shutter open. When all is ready, the act of withdrawing the pear closes the shutter. Or, tie a small india-rubber ring (such as used for umbrellas) on to the tube loosely, and when you wish to focus, squeeze the pear, double the tube, and slip the ring *just over* the bent part; you can then put the pear down anywhere. The act of picking it up straightens the tube, throws off the ring, and closes the shutter.—Truly yours,
W. H. M.

ELECTRIC LIGHT FOR COPYING.

DEAR SIR,—In a short article in the *YEAR-BOOK*, Captain Waterhouse calls attention to the electric light as a means of copying maps, plans, and drawings, and expresses an opinion that it would be of great service if used for that purpose. It is now nearly eleven years since I had the opportunity of testing the electric light in that direction; and although my experience with it was but limited, it was still sufficient to enable me to say that the electric light can be used for copying purposes with very great advantage. I enclose a photo-lithographic transfer made from a negative taken with the electric light at the time mentioned above. The negative is about one-third the diameter of the original print. It was taken with Dallmeyer's 10 by 12 triplet lens and the smallest stop; the time of exposure fifteen minutes, with the light six feet from the print. No attention was paid to the reflection or concentration of the light, and I have no doubt that if efficient means were adopted for doing so, the exposure would be reduced to half the time stated, and with the more recently invented rapid rectilinear I have no doubt three minutes would be sufficient with the smallest stop, which would be somewhat less than the average time with daylight.

I trust that the investigations at present going on may result in some modification such as will reduce both the first cost and the cost of the maintenance of the light, and thus place it within the reach of all who may wish to use it.—I remain, yours truly,
A. BORLAND.

35, Wellington Road, Stockport, January 18th.

[The transfer is excellent, and very sharp.—ED.]

COL. STUART WORTLEY'S PAPER AT THE SOCIETY.

SIR,—I regret to say that I omitted to mention in my paper the distance at which a fully developed transparency was printed *through the ruby glass* I showed; the source of illumination being a paraffin lamp. The distance was ten feet.—I am, sir, yours, &c.,
H. STUART WORTLEY.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

The usual monthly meeting was held in the Water Colour Gallery, Pall Mall, on the evening of Tuesday, the 14th, Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed.

The PRESIDENT intimated that the following members of Council would retire by rotation; eligible, however, for re-election, except the retiring Vice-President, who was not eligible for the same office during the coming year:—James Glaisher, F.R.S., President; Professor Stokes, F.R.S., Vice-President; W. Bedford; G. Wharton Simpson, M.A., F.S.A.; R. W. Thomas, F.C.S.; Lord Lindsay; J. T. Taylor*; Col. Stuart Wortley, members of Council; J. Spiller, F.C.S., Treasurer.

Captain ABNEY, F.R.S., read a paper "On the Fading of the Undeveloped Photographic Image, and on Soluble Bromides in Emulsions" (see page 38).

After some discussion Col. Wortley exhibited and described a new instantaneous shutter (see page 39).

In answer to a question from Mr. England, Col. Wortley said the size of the shutter was inconvenient for use close to the plate.

Mr. ENGLAND thought that the only method of having a perfect instantaneous shutter was by placing it close to the plate. He had designed one of this kind which was now in possession of Mr. Dallmeyer.

Mr. DALLMEYER had adapted the guillotine shutter of Mr. England to several cameras, and considered it theoretically to be constructed on the right principle, inasmuch as it allowed the full action of the lens on the plate: this was not the case in Colonel Wortley's method.

Mr. BLANCHARD thought that by using Mr. England's shutter there was an enormous gain. Without a doubt, the action was much more rapid than when the shutter was placed elsewhere.

Colonel WORTLEY did not want more rapidity. He had been able to obtain pictures fully exposed, the foreground of which was composed of dark rocks, and got all the detail he wanted. He admitted that for small pictures the shutter of Mr. England was advantageous, but for large sizes, such as 15 by 12, he did not think it was suitable.

Captain ABNEY remarked that the two best positions for a shutter were either in front of the plate, or where the diaphragm of the lens was placed. With respect to the ruby glass referred to by Colonel Wortley, he might say that he had never yet met with an example which did not let some blue light through. If the spectrum, after passing through ruby glass, were examined in a bright light, this would be distinctly detected. He had been obliged to discard ruby glass for this reason, and now only developed by candle or a feeble gas-light. He might mention that he had taken a transparency with blue emulsion under ruby glass in twelve seconds by the light of a paraffin lamp, instead of twelve minutes, the time of Colonel Wortley's picture. A good deal, so far as the exposure was concerned, depended upon the colour of the emulsion, and it was owing to this point not being sufficiently observed that failure sometimes resulted.

Mr. KENNETT inquired what Captain Abney used to shut out the light.

Captain ABNEY said that the globe of the lamp was coated inside with aniline, and on the outside with scarlet aniline dye. He always developed at some distance from the light.

Mr. KENNETT thought that ruby glass was untrustworthy.

Col. WORTLEY remarked that ruby glass was made perfectly safe if green glass were placed behind it; but then it was so dark as to be practically useless.

Captain ABNEY said that by the use of red, green, and blue glass, very remarkable combinations could be secured. By a combination of the blue and green, for instance, the purest blue possible was obtained in the light passing through.

After a vote of thanks, the meeting adjourned.

EDINBURGH PHOTOGRAPHIC SOCIETY.

On Thursday, 16th instant, Mr. W. H. DAVIES, honorary lecturer of the Society, gave the first "popular" of the season in Queen Street Hall, which was filled in every part by an audience assembled to hear a lecture entitled "Cyprus, Past and Present."

* Mr. Taylor has left England.

The LECTURER commenced by sketching the political history of the island from the earliest recorded event when it was conquered by Tothmes II. (a contemporary of Moses) to its most recent change under a British Protectorate. In dealing with the latter, notwithstanding an expressed desire to avoid controversial matters, an occasional remark slipped out, which amused a good-natured audience—indicating that Mr. Davies holds no uncertain opinions as to our Eastern policy. The lecturer next traced the history of Cyprian art, illustrating his remarks by copies of all the chief archaeological treasures discovered by General Luigi di Cesnold. These consisted almost exclusively of statuary, either carved in marble, limestone, or granite, or modelled in one or other of the plastic clays; of figures in bronze and copper; of ornaments in silver, gold, and precious stones; and of vases of earthenware and glass, from the rudest hand-made things to the most beautiful productions of the potter and jeweller. There were also toys and caricatures and grotesque figures all rescued from the earth where they had been buried for thousands of years. Of paramount interest were the beautiful reproductions of the tablets, covered with hieroglyphics, relating to the story of the Universal Deluge. While these were on the screen, a portion of the translation of this wonderful document was given: it read exactly like a paraphrase of our Biblical version. Concerning the production of these tablets, which formed part of the library of the kings of Assyria and Babylon, Mr. Davies said:—"The rulers of these regions, living thousands of years ago, were not content with the usual papyrus and reed-pen, or even with the engraved or carved records on stone, for after very careful examination of the original tablets I am firmly persuaded they were content with nothing less than the use of moveable types which were pressed into plastic clay, and then these impressed tablets were carefully trimmed, dried, and baked. This, and this only, can account for the facsimile copies of the same work with such marked variations as the different pieces of cylinders show. I do not dogmatically assert this view to be correct, as it is opposed to that of some of the most able Oriental scholars; but I do say that, looking with the trained eye of a tradesman at this old potter's work, I am not far wrong, and that numerous copies of the legend we have to-night, and of books relating to other matters, were produced in the supposed most enduring and handy materials, and then distributed to the various centres of learning or wealth. Depend upon it, these ancient people were not the preparatory monkey from which we are said to have been derived. They were, on the contrary, a highly-civilized and cultivated race of men—skilled in arms, in poetry, in building, in sculpture, in metal work, in the arts generally; and men who left an imprint upon the world, which exists at the present day." The statues were of considerable interest, indicating the various epochs of Egyptian, Assyrian, and Grecian ascendancy, and finally, what might be called a national school of art, with distinctive Cyprian expression, some were evidently characteristic portraits. "Ancient Greek civilization could trace much of its artistic and religious development to Cyprus, which ages before our British speaking people had a language, before the world we call civilized Christendom had a name, was a very thriving community, partly maritime, partly manufacturing, and largely religious, worshipping the Deity in the form of, or through the medium of, Aphrodite, Astarte, or Venus, precisely as do some of the people of the present day worship their Deity in the form of, or through the mediumship of, Mary the Mother." Among the vases very beautiful forms were found, some quite unique, others of very peculiar design, such as an annular vessel, to be seen any day in the best jeweller's windows, thus showing the persistence of some favourite ornamental forms.

The third part of the lecture consisted of views taken in the island during the past summer, illustrating ancient Christian churches, modified by Moslem requirements, some in ruins, others still used, various land and seascapes, giving a very good general idea of the island as it now is. One or two panoramas exhibited the British ironclads in the harbours, others the Indian troops encamped without the walls of a town with mosques and minarets; one showed a company of artillery on the march.

It would be quite impossible to indicate within reasonable space all the interesting features of the lecture, but it may be stated that the Society was entirely indebted to the exertions of Mr. Davies for this most interesting and instructive "popular evening." Each of the seventy transparencies was made under his personal supervision expressly for the occasion, while the attractive manner in which the lecture was delivered rivetted the attention of about a thousand people, who frequently indicated their approbation by emphatic applause. The general arrangements for the meeting

were under the direct management of Mr. Dobbie, to whose personal exertion the Society is greatly indebted; and the lantern was exceptionally well managed by Messrs. Mitchell and Mathieson.

W. T. BASHFORD, Cor. Sec.

PHOTOGRAPHIC SOCIETY OF FRANCE.

At the meeting of the 8th November, 1878, M. PELIGOT, President of the Society, occupied the chair.

After the admission of new members, and the reading of extracts from foreign journals,

M. DAVANNE described the steps that had been taken to promote the erection of a memorial to Niepce in his native town of Chalons-sur-Saone. A council consisting of the principal men of Chalons has been appointed, who now applied to the Photographic Society for assistance in inciting a liberal response to the appeals for subscriptions, either through the individual action of its members, or by the collective action of the Society. It was arranged to nominate an influential committee to co-operate with the council at Chalons, to be composed of persons eminent in the different branches of photography both at home and abroad. On this committee, Capt. Abney and Mr. Harrison were appointed to represent England.

In the name of M. Pellet, M. DAVANNE communicated to the Society some observations on the use of ferrocyanide paper and the improvements that M. Pellet has introduced into the process. The first of these consists in floating the paper on the ferrocyanide bath, instead of immersing it, by which means the action of the developer is limited to that surface that has received the luminous impression, so that the other side of the paper remains white instead of being turned blue. To prevent the liquid from flowing over the upper side, the edges of the paper, quarter inch deep, are turned up all round. The paper thus prepared is first placed in a twenty per cent. solution of ferrocyanide of potassium, and then washed over with water acidulated with sulphuric acid; by using the latter acid in preference to hydrochloric, but in a smaller proportion, no noxious gases are evolved, and the acid is economised. M. Pellet has also succeeded in considerably improving the paper that he uses in his process; these are now of four different kinds, adapted for various purposes, and one of them is so tough and transparent as to be capable of use as tracing-paper.

A paper was then read by M. PELLET, on some experiments that he has made as to the action of the juice of beetroot on perchloride of iron under the influence of light. By pressure, a liquid of 1030° of the densimeter was obtained from the leaves of beets. A standard solution of iron perchloride containing ten per cent. of the salt at 45° B. was then prepared, and also a second solution containing ten grammes of iron salt in the same proportion, to which fifty c.c. of the juice of beet had been added; the latter solution was then made up to 100 c.c. when a slight precipitate was formed. After filtering, two portions of a piece of paper were brushed over with each of the two solutions respectively, and put to dry in the dark. A drawing executed on tracing-paper was now placed in an ordinary printing frame with its right side touching the glass, and underneath a piece of the paper sensitized with the two solutions as above described, and the whole was then exposed to the light. After some trials, it was established that to obtain a complete reduction of the salt of iron in the standard solution, it required an exposure of ten minutes to direct sunlight, while with the solution containing the juice of the leaves of beet one of from two to three minutes only was necessary. In order to determine the exact time when the complete reduction is effected, M. Pellet uses a saturated solution of yellow prussiate of potash. The paper exposed for a sufficient length of time under a tracing gives a blue colour in all the parts corresponding to the lines—that is to say, where the salts of iron have remained in the state of per-salt—while no colour is produced in the insulated parts where the iron salt has been reduced or converted into the condition of protoxide, on which the prussiate produces no action. In this way prints are obtained in blue lines on a white ground. Still further experiment showed that 'crystalline sugar, when added to a solution of ferric perchloride, does not diminish the time of exposure, and consequently has no effect in reducing the salts of iron. The results deduced from these experiments are:—1. That the juice of the leaves of beet have the property of facilitating the reduction of the iron salts under the influence of light. 2. That this reduction may be effected in the dry state with solutions, therefore, that have probably no vitality. 3. That the reduction is due to the oxidation of one or more organic substances contained in the leaves—such as sugar, tannin, nitrogenous compounds, and vegetable acids.

M. FERRIER recommended to the notice of the Society an instrument invented by the Commandant Faure-Biguet, for determining the size of the image on the focussing glass of the camera. In a note on this instrument, which is called the Iconometre, communicated to the Society by M. Vivien, it is described as an inverted telescope on the principle of Galileo—one, that is, in which the object-glass serves as an eye-piece, and *vice versa*. Between the objective and the object that is sighted is placed a screen pierced with a rectangular aperture, whose dimensions are proportional to those of the camera. This screen can be, according to wish, approached to or removed a greater distance from the lens, and serves to limit the field of the instrument in such a way that each distance of the screen from the lens corresponds to a different focal length. It is therefore only necessary to observe the object with the iconometre to be able to determine directly what objective to use; or, which comes to the same thing, to draw nearer to or recede from the object, to enclose a field more or less extended, in the case, that is, of using one objective only. The instrument, as constructed by M. Faure-Biguet, is contained in a small cylindrical case, of thirty m.m. in diameter by thirty-five m.m. in length; it is therefore very portable and handy for a photographer who is generally anxious to reduce his *impedimenta* to the smallest possible compass.

M. DAVANNE informed the meeting that M. Garcin, photographer of Lyons, had sent a number of plates prepared by him with gelatino-bromide, according to the instructions of M. Odagiri, with a request that they might be submitted to trial. It was determined to refer these plates to the committee of the Society appointed to examine dry processes, with the request that they would report on them at a future meeting.

M. STEBBING exhibited some positive prints in salts of platinum, obtained by the new process of Mr. Willis, and demonstrated the latter by experimental illustrations. He pointed out that by the latest improvements introduced by the inventor the use of sodium hyposulphite was entirely abolished, while the prints retained intense blackness in the shadows, and pure whiteness in the lights, without sacrificing any of the half-tones. The foundation of the process M. Stebbing explained to rest on the action of light on ferric oxalate. If a piece of paper be dipped in a solution containing a platinum salt and ferric oxalate, and be then exposed under a negative, the action of light will reduce the salt of iron to ferrous oxalate. To dissolve the latter, and in order that it may react on the platinum salt, the paper is immersed in a solution of potassium oxalate, when a print is obtained perfect in all its details. In order to stop the action, it is only requisite to leave the print for ten minutes in a bath of oxalic acid, and to wash it thoroughly three or four times.

Talk in the Studio.

"HARD TIMES."—Mr. A. J. Jarman writes to us as follows:—"Noticing in your last issue of the NEWS an extract from *Mosaics*, by Mr. Frank E. Pearsall, on 'Good Prices v. Hard Times,' his remarks came vividly before me last Sunday afternoon. While taking a walk through the village of St. Lawrence, I saw coming along a photographer's barrow, drawn by a donkey; but, imagine my thoughts when I read, in yellow letters, 'H. Griggs, Photographer, Wholesale and Retail Muffin and Crumpet Manufacturer.' Talk of hard times! this man is a 'plucton'; he knows what suits this time of year. Shadows for the summer, substance for the winter."

THE "ARTOTYPE," a new printing process, apparently of the collotype class, is exciting much attention amongst our American brethren, under the name of *Artotype*. An example issued in *Anthony's Photographic Bulletin* is a very charming picture, equal to any photo-mechanical print we have seen, and superior to many. It is recommended to portraitists as sufficiently simple and excellent for ordinary portrait work.

GOLD IN NITRATE OF SILVER.—All commercial refined silver contains gold, though, perhaps, in only the most minute quantity. Of nearly three tons, which have been dissolved under the author's supervision, none could be described as perfectly pure or free from the more precious metal. English refined silver generally contains more than American stamped bars, of which a considerable quantity must be operated on in order to render the gold appreciable. If such silver be dissolved in ordinary nitric acid, containing traces of hydrochloric acids, both metals will be dissolved, and, as long as the solution is acid and concentrated, minute quantities of both chloride of silver and chloride of gold

will be retained. Crystals deposited from the liquor will also contain traces of gold. Such crystals have a faint purplish tinge, as also the solution, so that in colour it resembles water containing a very small quantity of logwood ink. It is not known in what particular form or combination the gold exists in the silver, nor what special effect this impurity has on the photographic film. It is, however, possible that some of the troubles of photographers—as, for instance, that technically known as fogging—might, in some degree, be due to it. The impure salt may be readily prepared for experiment, by adding to a concentrated hot solution of pure silver nitrate a few drops of solution of chloride of gold. Flocks of chloride of silver holding chloride of gold are precipitated, but, by the addition of a little pure nitric acid, they are dissolved, and if the solution is set aside, crystals similar to those described may be obtained. Nitrate of silver containing gold may be purified by fusion. On dissolving the cake in water, the gold will be deposited, or may be removed by filtration through asbestos.—*Canad. Pharm. Jour.*

POTRAIT PAINTING.—In portrait painting, as compared with historical or poetical pictures, profound insight takes the place of working invention. Claude Mellot said that he would never paint a man unless he had known him a year. The portrait painter must discern the subtle sources of expression in eye, in mouth, in features; must see what traits indicate character, temperament, will; and must be able rapidly to generalise, and permanently to idealise. The State should cause all great men, who vitally affect the life and thought of the nation, to be painted for a true national gallery, by the greatest portrait painter of the time. The greatest painter, in this sort, of our time is Millais; and he ought to be restrained to painting only the great, the noble, or the lovely. He can choose his sitters, and should now never paint a portrait that is not, in the true sense, historical. He should work for the aftertime. A great portrait painter may be exposed to the fine old conventional laudation of such critics as the late F. Bayham, who wrote in Thackeray's original *Pall Mall Gazette*, of a portrait:—" (1906) The McCulloch of McCulloch.—A McCulloch,—is a noble work of a young artist, who, in depicting the gallant chief of a hardy Scottish clan, has also represented a romantic Highland landscape, in the midst of which, 'his foot upon his native heath,' stands a man of splendid symmetrical figure and great facial advantages. We shall keep our eye on Mr. McCulloch." But such a painter as Millais is left wholly untouched by the criticism which is a product of insincere incompetency speaking in the Jargonese tongue. The great portrait painters of this day should do as great a service to the future as Van Dyck, Reynolds, and others, have done for us.—From *The Magazine of Art* for January.

To Correspondents.

W. B. A. (Aberdeen).—Belgium sheet glass is much the cheapest and therefore the best for glazing a studio. Of course, a white or colourless glass would be a little better in regards amount of light admitted; but it costs much more, and more quickly becomes yellow, obstructing much actinic light.

G. H.—The examples of sensitive albumenized paper you forward are so much discoloured that it is difficult to form any definite opinion in regard to them. But, so far as we can judge, the irregular stains are due to the silvering, being apparently chiefly due to scum on the surface of the silver solution. We should think also that the bath was getting weak.

F. NUNN.—The address of Thorpe and Wutson is 28, Ludgate Hill. The washings of prints may be safely mixed with old fixing baths, to be precipitated with liver of sulphur.

B. B.—The best mode of ascertaining the proper proportion of bichromate to render gelatine quite waterproof will be by experiment. Without trying we do not know. We should try two or three grains per ounce. The best mode of obstructing the direct rays of the sun, and yet obtaining light, is to use screens or blinds of tracing cloth, which is very transparent, but will obstruct direct sunshine. A screen covered with this substance, which can be moved about as required, is useful in such a case. You need not apologize for asking questions; we always have pleasure in affording our readers all the aid we can.

R. M. D.—A paper transparency with the image well in the body of the paper may be secured by floating the albumenized paper plain side on the silver. Float double the usual time; then print very deeply, and tone and fix as usual. When finished, use wax, paraffin, or castor oil to make the print transparent.

D. F.—Combining the intensifying process with pyro and silver a long time will sometimes cause pinholes.

R. S. M.—Chloride of calcium placed in a drying-box readily absorbs moisture, and assists drying. Sulphuric acid has a similar property. The method of drying gelatine plates to which you refer is that of M. Boivin, described in the letter of our French Correspondent some time ago. It consists simply in placing the prepared plates in an ordinary grooved box, arranged so as to be capable of being kept level, in the bottom of which is placed a glass dish containing sulphuric acid. One of the well-known properties of this acid is its capability of absorbing moisture. At the same time, this system can only be advantageously employed when a large number of plates is prepared at once. A current of air passed through such a box is as good as anything in our estimation.

PROVINCIAL PHOTOGRAPHER.—You will find in our YEAR-Book just issued many advertisements of those who undertake enlargement for the profession. We cannot here recommend special bouses with propriety.

AMATEUR PORTRAITIST.—A good collodion positive is often very effective. A bromo-iodized collodion of good body; a 35-grain silver bath, slightly acid with nitric acid; a 15-grain iron developer containing fifteen minims of acetic acid; and one minim of nitric acid, will generally give good results. We prefer glass to iron plates, and we prefer a backing of maroon velvet to black varnish, as this gives a softer and more harmonious picture than the varnish. A cyanide fixing bath gives a somewhat purer tint to the whites than hypo. But a cyanide bath is better after it has been used for a time, and become charged with cyanide of silver. The question of colouring is a matter of taste. If done with great skill, it is a great improvement, but no improvement at all if badly or indifferently done. Newman's positive colouring varnish gives a fine surface for taking the colours. Let us know how you succeed.

NOVICE.—There is more satisfaction and credit, of course, in preparing your own emulsion and your plates throughout; but as a beginner, you reduce your risks very much by purchasing what you require ready prepared. Much depends upon your aim. If you wish for an exciting hobby, begin at the beginning, and prepare everything for yourself. If you wish as easily and quickly as possible to obtain pictures, buy everything ready prepared.

G. G.—The lens you mention is excellent. We cannot recommend any by name here, but, if we could, we could not recommend a better than that you propose.

HARRY POINTER.—We fear that no method exists whereby you can check the false announcements of a trade rival. If he announces himself as the recipient of medals, you can ask him when and by whom awarded; but you cannot compel him to tell you, nor can you, without risk, expose his announcements as false. The law only punishes crime, not sin; and lying, although a despicable sin, is not a crime which the law can punish.

W. H. MASON, JUNR.—The fact that the imperfectly fixed prints do not show at the time is explained by the facts which occur. When the unfixed print is placed in hypo strong enough to fix it, the first thing which occurs is the conversion of all unreddened silver into hyposulphite of silver; and this hyposulphite of silver is soluble in the strong solution of hyposulphite of soda present. But the hyposulphite of silver formed is not soluble in water or in a weak solution of hyposulphite of soda, and remains in the print in such case. It is easily decomposed by light, and when decomposed, produces the dirty yellowish or brownish stains seen on imperfectly fixed prints.

W. B. D.—Dr. Eder's address is Realschule, Troppau, Silesia, Austria.

A. B. C.—For burnishers, No. 1. We have not seen Moulton's washing machine.

JAMES CHINN.—Many thanks. We shall be glad to hear from you again.

CHARLES JONES.—Col. Wortley's paper to which you refer appears in our twentieth volume, in the number for June 23rd, 1876, and following number. Mr. C. Bennett's process appears in our last volume, and in our YEAR-Book just published. Colonel Wortley's uranium process appears in our volume for 1872.

A. E.—The print is manifestly fading, and suggests the same conclusion to our mind which we first expressed in relation to the coloured one, namely, that something in the mounting analogous to corrosive sublimate in paste was in operation. It is not probable that such can be the case in a print mounted by a photographer, but the appearance suggests something of the kind. We can find no really satisfactory solution. The many mysteries of the fading of silver prints are fast finding out! When permanent printing processes exist, it is amazing that another silver print is produced!

W. COLQUHOUN.—Thanks.

ERNEST DUNY.—Thanks. The Diploma has not arrived. Was it sent by post?

ERRATA.—In Mr. W. B. Doyle's letter on "Substrata for Dry Plates," in our last, page 33, second column, fourth line, first word, for "pure," read "puce"; same page and column, fifteenth line, last word, for "substitute," read "substratum."

The Photographic News, January 31, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY IN COLD WEATHER.—M. ERNEST LACAN AND MR. THOMAS SOPWITH.—THOMSON'S CYPRUS.

Photography in Cold Weather.—A can of hot water in the dark-room is a desirable thing this weather in the event of the apartment not being otherwise warmed. Complaints about the insensitiveness of the dipping bath and the sluggish action of the developer are not unfrequent if the solutions become chilled, and work, as every photographer knows, is considerably impeded by cold weather. A luke-warm developer will very frequently bring out a result which a solution that every moment bids fair to freeze is quite incapable of yielding; while photographers must always remember that the solubility of a liquid is sometimes materially impaired by its being very cold. A hot saturated solution of bichromate of potash, for instance, contains much more of the salt than a solution at 32° Fah., for as the liquid cools it will be found that salt becomes precipitated. But it is not only that cold impairs the degree of solubility in liquids; it exerts also physical effects in the photographer's dark-room. A glass plate, for example, cleaned in a cold room and then brought into a warm one, gets covered with moisture, and in this condition is very susceptible of injury. If the collodion is simply poured upon the plate, no great injury is done, for the collodion will flow all the more smoothly, most likely; but if, as most photographers are in the habit of doing, a camel's-hair brush is drawn across the surface, and moisture happens to be deposited thereon, a streaky plate is the inevitable result. At the same time, the dark-room, we hold, should not be too much warmed this weather, since the difference in temperature at night and day is not without an injurious influence upon the photographer's requisites. A small stove in the dark-room—unless the latter happen to be large, and be employed, say, for the sensitising of paper as well as for other work—is hardly to be recommended, for if collodion, ether, or alcohol are in immediate proximity, the risk is naturally very great. A photographer has more to fear, in fact, from extreme heat than extreme cold. Where the dark-room used specially for operating is but a closet, the best thing is to have a can of hot water standing therein, which may be changed every hour or two, and which diffuses warmth enough. If developer is to be warmed, this may be best done by holding the beaker containing the solution in the warm water for a moment or two, when the chill will be removed sufficiently for working under normal conditions. We must, however, warn operators to especially beware of cyanide and bichromate in cold weather. The circumstance of having to do with warm and cold solutions is apt to lead to chapped hands and chilblains; some people, indeed, suffering from these annoyances under very little provocation. In these circumstances one cannot be too careful in handling solutions. In the case of chapped hands there is sure to be some fissure in the cuticle, while with chilblains the skin is so tender and swollen that its breaking is always imminent. Cyanide of potassium and bichromate of potash are bad enough to have to do with in the case of a whole skin, but when the latter is broken the result may be exceedingly dangerous. There is on record the death of a photographer who simply dipped a sore finger into cyanide; and bichromate of potash, which is employed by some every day in the sensitising of tissue, would prove hardly less dangerous under the circumstances. Both salts in solution penetrate the system through the skin—cyanide, in fact, having a soluble effect upon the cuticle; but if they act upon a naked wound, the effect is quick and striking. Rubber finger-stalls offer such a perfect and simple safeguard, that they should always be at hand in a photographic laboratory to secure one from the effects of bichromate; while as regards cyanide, there is, under ordinary circumstances, no reason whatever for its use. Cyanide of

potassium should be banished from the studio and dark-room for general work, and only for experiments in photochemistry, or in isolated cases—as, for instance, in the cleaning of Daguerreotypes—is really necessary.

M. Ernest Lacan and Mr. Thomas Sopwith.—Two deaths in the photographic world are to be noted. M. Ernest Lacan, who has been for so many years connected with this journal as Paris Correspondent, has just died—a man whose acquaintance with photography and photographic literature is from a very early period. M. Lacan was short of stature, brisk and energetic in manner, and with an address that was peculiarly taking. To a foreigner who was not well versed in the French tongue M. Lacan's address was particularly pleasing; he would suggest the word that your tongue hesitated to pronounce, or, to give confidence, utter a sentence in English now and then, thus rendering the conversation at once more intelligible and pleasing. M. Lacan executed some important work in connection with the municipal literature of Paris, employing his photographic knowledge to some purpose in the reproduction of old sketches and MS. During the siege of Paris, M. Lacan remained in the city, but was perforce compelled to leave his home for the time being. His residence, situated in what was once termed the *Avenue de la Grande Armée*, but now rejoicing in a more republican title, was beyond the *Arc de Triomphe* and the *Champs Elysees*, in the direction of Versailles, and not far from the *Porte Maillot*, and consequently under fire from the Prussians nearly the whole time of their investment. The district around was rendered unsafe by the falling shells, and hence M. Lacan's withdrawal. When he went back to his residence, although this had not suffered, there was evidence in every direction of damage done to houses and property. Here, a big shell had crushed a house like a bandbox, and sent its walls into fragments; at another spot the missile had struck the cornice and taken an angle off the masonry. In some cases, where the shell did not burst, it was found in the cellar, having made a daylight perforation from roof to basement. But M. Lacan's sufferings were not so much due to shells as to scarcity of provisions during his enforced residence in the centre of the capital, and, if we remember rightly, it was one of his friends in London, no other than Dr. Phipson, who was the first to send our late collaborateur a case of provisions on the breaking up of the siege. Those who personally knew M. Lacan will remember him as a bright, kindly little gentleman, ready and anxious to assist all, who might visit him, in getting a peep at photographic life in the French capital. The other gentleman whose loss we deplore is Mr. Thomas Sopwith, M.A., F.R.S., for a long time a member of the Photographic Society, and many years one of the referees of the Amateur Photographic Association, his colleague being Mr. Glaisher. Mr. Sopwith was best known as a mining engineer, and published many valuable records and data upon mineralogical subjects. Two or three volumes of travelling reminiscences also emanated from his pen. He took a keen interest in photography, both in respect to its scientific and pictorial association. When gun-cotton was first tried for mining work under his superintendence, Mr. Sopwith conceived the idea of having the various results produced in blasting photographed, so that the record might be as impartial as possible. The rent and fissure made in a rock by equal weights of one explosive or the other was thus truthfully rendered. Mr. Sopwith took considerable interest in the advancement of photography, and was no stranger at the meetings of the Photographic Society, while his face has also been seen at the Solar Club, and at other social gatherings connected with photography. Mr. Sopwith was born in 1803.

Thomson's Cyprus.—We made mention last week of Mr. Thomson's book on Cyprus, or "Through Cyprus with the Camera," as it is called. We are glad to see that the delay we spoke of is at an end, and Messrs. Sampson Low and Co announce that the two volumes are now ready for publication. The book is likely to prove the best reflex we have so far had

of Cyprus and its inhabitants, for the photographs which illustrate the pages were taken so recently as last Autumn. Her Majesty has taken some interest in the work, and the first order received for a copy of it emanated from the Royal library.

ART IN PHOTOGRAPHY.

BY J. CROTHWAITE.*

WHATEVER description or line of art is followed by the student or practitioner, it is of importance that a knowledge of the fundamental or elementary principle should be obtained, otherwise his work must be produced at hazard, and the title of "artist" cannot rightly belong to him.

If a picture be faulty in selection of point of sight, in perspective, or have incongruous objects introduced, however good the workmanship or mechanical part, it will be more or less objectionable to those of cultivated taste or trained eye who may happen to see it. The dissemination of some knowledge of the principles of general art amongst photographers is extremely desirable. We do not certainly see now the gross mistakes from an art point of view that were formerly perpetrated. They have been so loudly condemned and noted by the public and the press that a general improvement has been the result; but there is room for still further improvement, and any advance in that direction can arise only from an increased and enlarged acquaintance with the principles governing true art, and by the careful study of good examples.

Of course an extreme knowledge of forms, effect, and style is, perhaps, not so absolutely necessary for the photographer as for the artist pure and simple; but the larger and more general the knowledge of art possessed by the photographer, the more surely, if he have any art feeling, will his productions be more or less imbued with the true spirit of art.

I know well the difficulties in the way of some photographers, which prevent, to a great extent, the development and utilization of their artistic knowledge—a limited studio, possibly a limited command of money wherewith to obtain the necessary accessories and apparatus for the production of art studies; in addition to which is the daily routine of the studio—the obligatory production of a certain class of work which has to be done, come what will—the class of sitters, so well known, who will have the stereotyped poses and lighting, who object to black faces and heads any way out of perpendicular—all these things tend to make it difficult for some men to realize their ideas of the combination of art and photography. There is no doubt that to produce high-class work, and work that shall not be open to the charge of monotony, an extensive stock of apparatus and accessories is absolutely necessary. Work of a high class, and which may lay claim to artistic merit, may be produced with few and simple appliances; but when these appliances have been used for the production of hundreds or, perhaps, thousands of pictures, the thing, to say the least, becomes rather monotonous.

To the artist with pencil and brush this is a matter of little importance. He may stock his sketch book with studies of accessories and backgrounds to be used and combined in any manner he may consider advisable; but the photographer is limited to the presentation of real objects, which must be actually combined to produce the requisite effect. If a portion of the money annually expended in posing chairs, artificial furniture, and mysterious combinations and structures (which might be worshipped without breaking the second commandment, as they are certainly not the likeness of any thing in the heavens above, the earth beneath, or the waters under the earth), was spent in the purchase of good artistic furniture, such as we see in daily use, we should not be

distressed by the sight of so many artificial-looking pictures, where we see the same chair, table, footstool, &c., repeated *ad nauseam*.

It may be thought—and I have heard it said by some—"What better shall I be by devoting myself to the study of art? My business is a prosperous one; I have as much work as I can do. My object in business is not to carry out any Utopian ideas as to the elevation of the art. Let the public elevate themselves. I make money; what more do I want?" We hear it often remarked, too, that men with high artistic feeling are not generally successful men; and cases are cited of photographic artists who have not been money-making men—perhaps the reverse. To holders of these opinions, I have not a word to say; a man whose ideas are purely utilitarian is without the pale of those whom I would address. Every man, it is said, has his hobby; and if we make art our hobby we need not ride it to death. Commercial success and artistic photography are perfectly compatible, as innumerable instances testify.

A little time devoted to the study of art will largely repay the student as a mental pleasure, if not always in a pecuniary manner; and, as it forms such an extensive department of photographic work, its study to a greater or less extent becomes a necessity, if we would reap any measure of success. It is becoming daily more and more recognised. The shop-windows are full of cleverly-posed and lighted portraits of the temporary beauties of "society." Our patrons are gradually, and, perhaps, to themselves unconsciously, becoming educated to the higher walks of photographic art; and the stock poses and furniture will not much longer satisfy the demand upon our art. The standard of our general work must be higher, or we shall certainly be left behind in the race for success; and the only way to obtain a place in the ranks of artistic workers is by making art a study, noting assiduously the various changes and effects in nature, and by carefully examining good works of art.

No recipe can be given for picture-making. Success depends mainly upon the feeling and education of the producer. An ardent love for his profession and a strong desire for excellence will inevitably lead to the development of real artistic feeling. "The mind," says Sir Joshua Reynolds, in his Sixth Discourse, "is but a barren soil which is soon exhausted, and will produce no crop, or only one, unless it be continually fertilised and enriched with foreign matter. The greatest natural genius cannot subsist on its own stock. He who resolves never to ransack any mind but his own will soon be reduced from mere barrenness to the poorest of all imitators; he will be obliged to imitate himself, and to repeat what he has often before repeated."

A knowledge of the principle governing composition and light and shade may not be applicable directly to the production of a photograph; a man may possess all the available resources of the photographer—mechanical, optical, and chemical—yet, if his art education have been neglected, his pictures, though they may be excellent specimens of manipulation, will yet want that nameless something which distinguishes an intellectual production from a photographic representation.

It is true that between painting and photography there is a material difference. The same laws apply to both, but the mode of procedure is different. The painter can arrange and compose pretty much as he pleases. The photographer is limited to the arrangement provided by nature—that is, in the department of landscape art; but even in that case much may be done by a judicious selection of position, so as to avoid some portion that may be unsatisfactory, or to introduce some feature that would enhance the charm of the subject. A careful and accurate consideration of the different effects visible at different periods of the day is of great importance, and cannot fail to be of the utmost use to the landscape artist. The mind

* Read before the West Riding of Yorkshire Photographic Society.

cannot be too attentively fixed on Nature's workings; for her effects are inexhaustible and ever changing, awaiting only the notice of the trained eye and hand to obtain a lasting and permanent record of their transient beauty.

Upon the size and relative position of the masses of light and shade in a picture depends the general effect of the composition—contrast producing upon the mind of the spectator a sensation of energy, while a subdued effect, consisting principally of gradations of half-tints, produce a feeling of rest and repose. The extent to which these effects are introduced must always remain a matter of taste, and the proper introduction of them a matter of education—the one great necessity being a careful and systematic treatment of the materials employed.

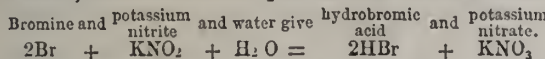
The rules must not be considered as at all contrary, but simply as forming a basis upon which any special effect may be constructed, and which are capable of very considerable modification, but a knowledge of which cannot be neglected in any branch of pictorial art, the more especially as combination pictures are now so common and so frequently produced. In these pictures the art principles are of the utmost importance, otherwise the composition may be wanting in keeping or in perspective, the selection and arrangement of the various negatives employed requiring a great degree of skill and judgment on the part of the composer. The proper fitness must be maintained, and a judicious attention paid to the probabilities of the story intended to be told. Appropriate dress and accessories contribute largely to the success of the work. A great variety of expression may be given by only varying the position of the head and neck. The hands, also, are great aids in expressing emotion, as numerous examples existing in the public galleries, which have been made familiar by engravings, will testify. Perhaps the celebrated Last Supper, by Da Vinci, will demonstrate the powerful expression of the hands as well as any picture I just now remember; indeed, in every way the picture will well repay a considerable amount of careful study being given to it.

In my next paper I propose to produce several illustrations to this end, one evening proving too short to enter into the matter with any great degree of advantage—the more so as these preliminary remarks have already greatly exceeded my intention.

ON THE FADING OF THE UNDEVELOPED PHOTOGRAPHIC IMAGE AND ON SOLUBLE BROMIDE IN EMULSIONS.

BY CAPTAIN W. DE W. ABNEY, R.E., F.R.S.*

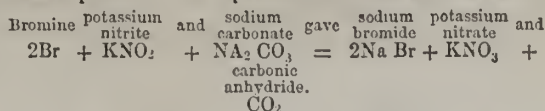
BEFORE proceeding farther, I should like to show what action the potassium nitrite really effects. We have bromine liberated, remember. The equation then runs as follows:—



It is evident that to obtain this result we must have the presence of a minute quantity of water. Now, the potassium nitrite rapidly absorbs moisture, so there is no difficulty on that score.

A study of this equation led me to another experiment. It appeared that though potassium bromide (or, presumably, any alkaline bromide) might not affect sensitiveness, it was by no means certain that hydrogen bromide—that is, hydrobromic acid—might not be a destructive. Supposing that to be the case, was it not possible to avoid its formation, and to cause it to be replaced by an alkaline bromide? If we substitute potassium hydrate (KHO) in the equation we should effect this. This was tried, but alas! the result was not satisfactory. The fact is, that potash and pyroxyline rapidly reduce silver bromide to the metallic state. It then occurred to me that a carbonate of an alkali would

answer as well. The result justified the expectation, the plate was perfect. The equation then runs as follows:—



I believe that I was correct in claiming these two discoveries as my own. I am perfectly well aware that it has long been known that sensitiveness is caused by applying a bromine absorbent to the film; but the fact that a large quantity of soluble bromide may be left in the film, and that no serious diminution of sensitiveness occurs, is, I believe, new. The combination of the alkaline carbonate is also, I believe, new. I have already pointed out, in a paper to the Royal Society, that sodium sulphite and potassium nitrite may be usefully applied to a film to prevent the oxidation of the film. It will be seen that they play a second useful part, in that they also absorb bromine. The addition of either of these bodies with a carbonate tends much to increase their value, since in both cases we have the formation of any acid prevented. The addition of organic matter, as used in a preservative, has the same effect as the potassium nitrite or sodium sulphite, or such other bodies; but its absorption of bromine is much slower—in other words, it has not such an avidity for it as the latter inorganic compounds, hence the sensitiveness is diminished when trusting to it alone.

There is another moral to which these experiments point. Supposing in making an emulsion with bromide in excess we use zinc bromide alone, it will be found that the effect of the nitrite is much diminished, and a more thorough washing is requisite than if an alkaline bromide be substituted. If, however, we use zinc bromide (say) and ammonium bromide together, and have a defect of silver nitrate, we shall find that the whole of the zinc bromide is converted before the ammonium bromide is touched; hence in this case any excess of bromide will be that of an alkali. With an emulsion thus formed, the nitrite would still be effective, and all the advantage of the use of zinc would also be obtained.

Now, the Society may ask, what earthly connection can this part have with the first part of the paper? It is this. By applying an alkaline carbonate to the film all nitrous acid liberated from the pyroxyline is immediately absorbed to form an alkaline nitrite, and the destruction of the photographic image from this cause, at all events, can be avoided. It is somewhat curious how one application of chemical knowledge aids us in determining another. The members of the Society are all doubtless aware of the necessity that exists of fuming with ammonia sensitized albumenized paper, from which has been washed out all free silver nitrate. They will also be aware that with collodio-chloride on glass or paper ammonia materially aids the vigour of the print. Up till lately I have always been under the delusion that in one case the ammonia combined with the silver chloride; and in the other with the silver nitrate, to form ammonia nitrate of silver. These reactions, however, are not necessary. When ammonia comes in contact with chlorine we have a compound of chlorine and ammonia formed which may decompose almost instantly, and form nitrogen and hydrochloric acid. Now hydrochloric acid, if formed, would give us a measly print; but this is prevented by the combination of the hydrochloric acid with the excess of ammonia present.

A further discussion of this, with some other points, I mean to bring forward on a future occasion. I had hoped to have said something regarding the spots to be found on washed emulsion; but I must confess that new phenomena in the investigation have presented themselves to me, and I do not wish to say anything regarding them till these have been thoroughly sifted.

I am afraid that my statements have been somewhat prolix, and perhaps disconnected. It is hard to me at all times to put a subject in the shape in which it shows to the best

* Continued from p. 39.

advantage, and I feel that my paper to-night will not appear in that guise. I cannot help thinking, however, that the facts I have brought before you are really important ones, particularly in the preparation and application of emulsions.

A film containing bromide in excess is always cleaner and freer from spots than one in which even a small quantity of silver nitrate is present. How to utilize the former to the best advantage I think I have shown you.

The following is from the *Journal* of the Society:—

COL. STUART WORTLEY observed that some years ago he had found very satisfactory results with reference to the keeping qualities of pyroxyline follow from washing the pyroxyline with a solution of ammonia. He had kept pyroxyline so prepared for four or five years without any sensible deterioration, whether the pyroxyline had been made from cotton or from paper.

CAPT. ABNEY inquired whether the pyroxyline had been kept in bottles?

COL. WORTLEY: Yes; and in brown paper envelopes. Previous to washing the pyroxyline with ammonia, the acid it contained used to eat away the paper of the envelope, but now this never happened.

MR. SPILLER considered the use of the alkaline nitrite was a very interesting discovery. He gathered from the paper that Capt. Abney preferred now to use an alkaline carbonate in conjunction with a nitrite, the change being that the nitrite was converted into a nitrate, the presence of the carbonate providing for the elimination of carbonic acid. With reference to the formula quoted by Capt. Abney, he (Mr. Spiller) would suggest that, instead of using potassic nitrite in conjunction with sodic carbonate, it would answer the purpose better to employ potassic carbonate. The action of the two bodies of the latter class, he thought, adhered better to the system laid down by Capt. Abney some time ago, namely, that it was more advantageous to use substances of a deliquescent character in the preparation of dry plates.

CAPT. ABNEY observed that he only brought the present formula forward as a specimen. He had tried all possible combinations, and he gave the result of the one he had mentioned to-night simply as a result that he had obtained. He fully agreed with Mr. Spiller that it would be better to use potassic carbonate in preference to the sodium salt. With reference to Col. Wortley's washing of pyroxyline with ammonia, he might remark that, as having experience with pyroxyline of the explosive kind, the ammonia was useless if decomposition had once set in. If the pyroxyline had dried before washing with ammonia, the latter could not prevent spontaneous decomposition. The only chance with ammonia was not to let the cotton dry before using it. With regard to explosive cotton, the great difficulty was to preserve that "tottering equilibrium" which an acid condition rapidly upsets.

Colonel WORTLEY said that he washed the pyroxyline immediately after it came from the acids.

MR. SPILLER said that he remembered, some thirteen or fourteen years ago, when he was working with Professor Abel, in the War Department, that a French chemist brought before the French Academy the action of ammonia upon pyroxyline, asserting that definite combination was set up between the two. Professor Abel and himself therefore set to work and found that ammonia really did combine with pyroxyline, and it was an open question whether or not ammonia, in that case, did not have some effect upon the quality of the collodion made from pyroxyline so treated.

Colonel WORTLEY remarked that negatives made with pyroxyline washed with ammonia were much denser than those with pyroxyline not so treated. Acid in collodion gave a thinness of image, and he attributed the density in the former case to the perfect elimination of the acid by ammonia. Of course he used the latter very weak.

MR. SEBASTIAN DAVIS had noticed that decomposition in collodion used to take place much more rapidly years ago than it did now. He had some specimens which had been made three or four years ago, which were apparently unchanged. He considered it essential, however, that the pyroxyline should not only be thoroughly dried, but should also be kept in a dry condition. His method was to dry it in a water-bath raised to the temperature of boiling water; and although at one time there was considerable doubt as to whether or not gun-cotton

would explode at that heat, he believed that if conducted with proper precautions there was no danger of an explosion. He thought that the disengagement of iodine when potassic iodide was added to the collodion was not necessarily a sign that the collodion was decomposed. Years ago potassic iodide was used as being the most sensitive salt, although its sensibility gradually lessened after keeping about forty-eight hours.

CAPT. ABNEY observed that his experience with drying pyroxyline by means of a water-bath did not coincide with that of Mr. Davis. He thought that a temperature of 212° was decidedly dangerous, and he had had two or three ovens destroyed through drying pyroxyline at that heat, although he was not prepared to say whether it was the fault of the pyroxyline or through neglect of the attendants. He had also found that in drying emulsions by means of the water-bath decomposition was very apt to set in. With reference to Mr. Davis' remark as to the liberation of iodine, he did not mean that potassic iodide added to pure solvents would not liberate iodine. No doubt, with pure alcohol and pure potassic iodide, no discolouration would result. But other, also, had a direct effect upon potassic iodide, and the latter underwent decomposition in its presence. If, immediately after iodizing, the collodion remained discoloured, it might show the effect of nitrous acid. He was strongly against drying pyroxyline in a water oven.

MR. ENGLAND wished to know if the formula recommended prevented the image from fading.

CAPT. ABNEY replied that potassic nitrite in conjunction with an alkaline carbonate ought to give this result, but not when used alone.

MR. ENGLAND was inclined to think that the cause of fading was due to the kind of pyroxyline used. At the Paris Exhibition he had exposed a large number of negatives, and those which were developed immediately were perfectly successful, but those which were kept some time—most of them duplicate negatives—were, in the majority of instances, total failures. He had used two kinds of collodions, which he might call Mr. A's and Mr. B's. The first developed very well, but the second gave only a faint image which no amount of labour would bring up. The preparation in each case—emulsion plates—was exactly the same.

Captain ABNEY remarked that it was these failures of Mr. England which had set him thinking over the matter. He had worked from point to point until he had arrived at the adoption of an alkaline carbonate to solve the difficulty.

In reply to Mr. England, Captain ABNEY said that unless the sulphite was used in combination with the carbonate when the pyroxyline was at fault, the sulphite became exhausted, and so the image was attacked.

MR. VALETINE BLANCHARD observed that iodine was liberated from collodion from other causes than from decomposition of the pyroxyline. If, in iodizing, the collodion became rapidly red, then we might look for the cause in the ether.

Captain ABNEY: That would probably be acetic ether.

MR. BLANCHARD: The test for the ether is potassic iodide. If on using it turns red immediately, then the ether is not suitable. With regard to the method of storing the pyroxyline, he thought that the plan proposed by Col. Wortley, of keeping the pyroxyline in paper bags, was an excellent one, because it supplied a test for the decomposition of the pyroxyline. Ammonia should be applied before the pyroxyline was dried; afterwards it could not stay decomposition.

Captain ABNEY thought that the change of colour could not be due to the ether, but to some interior decomposition set up.

MR. BLANCHARD said he had had samples of ether which on mixing with the iodide instantly turned red. He had had some conversation with Mr. Williams on the subject, and was told by that gentleman that the ether in question was known as "ozonized."

MR. PAYNE JENNINGS stated, with regard to the fading of the image, that he had found the use of carbonate of ammonia recommended by Mr. Warnerke to be most satisfactory.

MR. ENGLAND remarked that this did not agree with his experience. The plan of Mr. Warnerke had totally failed in his hands. He had tried soaking the plates even to twenty minutes or half an hour, but did not succeed in bringing up the image. Perhaps the plates of Mr. Jennings had not been kept long between exposure and development.

MR. JENNINGS: About a fortnight.

MR. ENGLAND: Mine had been kept several weeks.

THE CHAIRMAN remarked that the paper presented a happy combination of the theoretical and practical. He was pleased

at this, because theory was only properly tested when put into practice. When experiments bore out what had been previously advanced by theory, good results were sure to follow. Captain Abney by his paper that evening had broken new ground, and he was sure the meeting would accord him a hearty vote of thanks.

PRELIMINARY EXPOSURES OF PAPER.

PURSUING the subject of preliminary exposures of sensitive paper to light, to secure quick printing and harmonious pictures, Mr. De Silva continues his remarks in *Anthony's Photographic Bulletin*. He says:—

"When I gave my sensitive paper a preliminary exposure to light, I had a special object in view: there was an objectionable contrast in the picture, and I wished to modify it, it being impossible to obtain another negative for at least six months to come. I exposed the paper under a piece of plain glass (in the sunlight) until a faint tint was visible—as near as I could estimate from one to two seconds of time would suffice—making allowance, so that after the picture passed through the subsequent operations of toning and fixing, a very faint tint would be visible. I have written 'from one to two seconds;' using white paper, one second would be enough: but on a tinted paper it would require a little more, otherwise it would not be visible—the law of contrast having a bearing on this point; markings which would be readily seen on a white ground, would require to be much darker to be discerned on a tinted one. I have again and again repeated the experiments, and always with the same results. I do not know that the actual time occupied in printing the picture is less on the pre-exposed paper than on the ordinary; but of this I am positive, that in order to get the same amount of detail in the lights (on ordinary paper), with the test negatives used, the shadows and middle tints would suffer considerably. In the case of the portrait, the portions underneath the mask were about one-fourth the depth required in a fully printed proof. Should the paper have been fumed with ammonia, it must at once, after it has been exposed to light, be placed upon the negative (unless it has been some time since the fuming was done), otherwise there will be a perceptible difference in the colour of the tint and the picture. *En passant*, on looking over landscapes in which clouds have been printed in, a deal of difference will often be noticed in the colours of the sky and the landscapes; not only is this occasioned by the difference in colour of the two negatives, but the change in the conditions of the paper which has taken place between the printings, one portion toning more rapidly than the other.

"I have before described in the *Bulletin* the method I adopt in preparing my paper; but thinking that it also might have some bearing on the case, I will jot down a few items; and if all who take interest in the matter will follow them precisely, and again try the experiments, I have no doubt they will arrive at the same conclusions that I have. My silver bath is clean,* and kept neutral with ammonia. I silver my paper in a warm room, and am most careful not to expose it to white light until I cut it up to go into the printing frames; thus I am enabled to keep my paper good for a very long time—in the winter for weeks. When it is perfectly dry—bone-dry—I submit it to the fumes of ammonia for about twenty-five minutes; if I intend to keep it several days I fume it longer. During the fuming it becomes somewhat limp. I then roll it sheet by sheet into a solid roll, and keep it shut up in a box until required for use. It must be borne in mind that a neutral bath requires to be somewhat richer in silver, otherwise the albumen will be dissolved off; that when the

paper is intended for long keeping, it should be floated longer, or it will print measly—secure a mean between 'measles' and 'woolliness,' the latter being occasioned by floating too long and also by exposing the paper to ammoniated fumes before it is thoroughly dry, though with paper long kept there is not much to fear from over-silvering, providing the sheet is drawn over a rod as it leaves the sensitizing solution. The prints tone readily, and brilliantly. Previous to toning, it is necessary to add a little acetic acid (say an ounce of ordinary to the gallon) to the first washing water, allowing them to remain in it until they are of a deep cherry red colour, not longer, and moving the prints about to insure an even action of the acid. The fixing will take a little longer; on holding the prints to the light, to determine whether they are fixed or not, care and judgment will be required to distinguish the structure of the paper from the unfixed parts, and it is better to be on the safe side and allow them to remain in the hypo a little longer, which I will presume any truly economical photographer makes fresh every day.

"The prints enclosed were made on paper which had been silvered early in December last, thirty-five days previous to printing. They have received very rough usage, having been in a specimen book since March, for which allowance must be made. They were rolled on a hot-plate press; had they been burnished, they would have presented the appearance of sand-paper, for burnished prints stand no wear and tear.

"I should mention that the paper used had a very slight rose tint; by using neutral silver bath, and fixing bath new and not weaker than one to eight, the colouring matter is so toned down as to be very agreeable. I have found that white paper of the same brand does not keep so well, not only in point of whiteness and brilliancy, but it is apt to work measly after ten days or a fortnight. I have an idea that the colouring matter adds to the keeping qualities of the paper, but I scarcely care to positively assert it, lest I should be entirely gobbled up by the critics; however, I think it would be worth inquiring into. During the winter months the pink paper so prepared as above works admirably for every class of work—for vignettes even for two or three days. While it possesses one great advantage, the surface being thoroughly dry and hard, it does not get frozen in the frames, and the annoying speckled appearance of the prints occasioned by the frost on freshly-prepared paper is avoided.

"Small details (often overlooked) make up a great whole. On reading over the report of the meeting of the N. P. A. at Buffalo, I was forcibly struck by the precise way in which one gentleman described the way in which he prepared his paper. He said:—'I silver my paper one minute to one minute and a-half on a 40-grain bath; I then lift it gently from the dish (in order not to take up much silver) and hang it up to dry.' Now, had that gentleman used a glass rod, over which to draw his paper as it left the bath, most assuredly he would have told us so; but (for that brand of paper) he would have prolonged the floating, for the rod would have scraped off nearly all the free nitrate, and his paper would have printed measly (under-silvered); whereas he left some on it—sufficient to convert the salting and albumen into chloride and albuminate of silver, leaving enough free nitrate to complete the operations successfully.

"And so I leave the subject of preliminary exposure, believing it a valuable aid in case of necessity, as many will no doubt find out; never for a moment advocating the injudicious use of it. It must be done, to be done well, with care and judgment."

[It appears to us that the method proposed is well worthy of careful attention, as the preliminary exposure will serve to give the initial force to chemical action, which, if judiciously managed, need not in any degree lower the whites, and, if continued until a tint is produced, give more harmony to prints from hard negatives.—ED. PHOTOGRAPHIC NEWS.]

* Too much importance cannot be attached to this. The bath should be kept in the light, and boiled occasionally. When the bath is full of albumen, the paper will have a peculiar lustre—if I might so express it, a metallic lustre—resembling very faintly the appearance of silvered albumen paper submitted to sulphurous fumes; in this case it will be necessary to print much deeper and tone more, as the prints are reduced by the hypo fixing bath considerably.

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IN MEMORIAM.

WE have to announce, with deep regret, the death of an esteemed friend, and one of our oldest *collaborateurs*, M. Ernest Lacan, our Paris Correspondent, who died somewhat suddenly on the eighteenth instant, at his residence in Paris. M. Lacan was the *doyen* of photographic litterateurs. His name will be familiar to the oldest photographers as one of the first associated with photographic literature. He was Editor of the *Moniteur de la Photographie*, a journal which he established many years ago, after having, during many previous years, contributed to other photographic journals, as well as to scientific literature generally. Our readers will remember, during the long period in which he has been on the staff of this journal, the lucid and comprehensive epitomes of photographic and scientific progress in France he laid before them; and many will remember personally the ready and amiable courtesy with which he was ready to aid them in Paris. Although a veteran in photographic literature, M. Lacan had only reached middle age. Personally, he was exceedingly courteous, amiable, and accomplished, and possessed a singularly winsome bearing. He was for many years sub-librarian to the City of Paris, he was a member of the Society of Men of Letters, Officer of the Academy and of the *Nichan Ifitikaar*, and Chevalier of the Royal Order of Ernest Auguste of Hanover.

SIZE OR PROPORTION IN PORTRAITURE.

IT must strike any one who reflects on the subject, that it is marvellous how little attention has been given by photographic portraitists to the subject of scale or proportion in portraiture. The boast of photography is its literal accuracy and uncompromising faithfulness to truth. Yet there is no element of likeness more important than relative size, an element which has hitherto apparently received no attention whatever. A general proportion has been adopted by portraitists; but each man has been a law unto himself. The aim has been to fill the plate with fair proportions without crowding it. If the figure were too large for the plate, it looked clumsy; if too small, it looked weakly diminutive, and required too free a use of accessories to fill out the space. The portraitist's idea of pictorial fitness has governed the matter, with, in many instances, no thought whatever of representing the sitter in truthful proportions, or any approach to an actual scale.

Who that has looked through a photographic album has not at times been struck by a curious incongruity in the fact that the portraits of some gentleman and lady whom

they knew, husband and wife, presented such a false idea of their relative size? The lady, possibly a *petite* person of slender build and small proportions, towered large on the card a perfect Amazon; whilst her husband, really a stalwart man, photographed on a diminutive scale, presented a small feeble person, half the size of his wife. The solid fine head of a Huxley has looked diminutive beside the microcephalous cranium of an idiot taken on a large scale. Or, again, a son of Anak has been dwarfed by being taken low on the plate, whilst a diminutive lady has been made almost a giantess by being taken high upon the plate, whilst her flowing train concealed her feet.

In our YEAR-BOOK for 'seventy-nine Mr. Spiller points out for the first time this incongruity in an article entitled "A Plea for Standard Sizes in Portraiture," which we reprint in the present issue. That the literal truth of which photography is supposed to be the embodiment demands attention to such a standard, cannot be doubted. Some time ago *Punch* made merry over the photographic portraitist who was supposed to have made himself popular by keeping on hand a miniature suite of furniture and accessories, in order to give importance and apparently increased stature to sitters of insignificant appearance. The notion was amusing, but every one felt that any such sham actually carried out would be contemptible. Yet something quite as destructive of literal truth has been adopted in constant practice, not, indeed, with the attempt to deceive, but from sheer thoughtlessness. Mr. Spiller justly complains that a head of Faraday, the noblest of modern philosophers, is made to appear diminutive beside some far from being his peers, simply because of the relative scale on which they are produced. He pleads, therefore, for the adoption of a definite scale which shall better satisfy the sense of right, and may also admit of some approach to measurement or absolute estimate of the proportions of the original of each photograph.

Mr. Spiller suggests the advantage of adopting a scale of about one-tenth the size of life as a general standard. Such a proportion would doubtless possess many advantages. But it is manifest that the scale must be dependant upon several considerations. First, the size of the picture, whether carte, cabinet, or larger; next on the style, whether full-length, three-quarter, or bust only. And, indeed, it is clear, looking at the matter in this aspect, there must be several standards, one for each size and each style of portrait. The usual proportion for a standing figure in a card portrait is a length of from about two inches and a-half to two inches and three-fourths. This, it will be seen, gives a proportion of about one-twenty-fifth the natural size of a man of middle height. On a cabinet size the standing figure should not exceed four inches and a quarter or four inches and a-half in length, which would give a proportion of about one-fifteenth of the human figure. For bust portraits, either in cabinets or cards, the proportions must, of course, be different. On a card, the head in a bust portrait should not much exceed one inch in length. And assuming nine inches as the average length of a man's head, a proportion of one-ninth is easily attained. In cabinets the length of the head may be from an inch and a-half to two inches, and a proportion of from one-sixth to one-fifth decided upon.

The absolute decision of proportions should not be decided *ex cathedra* by any one, but should be the subject of consideration and discussion, and be decided by general agreement. A paper read before the Photographic Society, if Mr. Spiller, to whom by right the task would fall, if he accept the duty, would break ground for discussion, although we fear little would be effected by verbal discussion. The more thoughtful consideration and discussion to be obtained through the pages of the journals would probably be much more effective and more eventually satisfactory, because of its deliberation and thoughtfulness. We shall have pleasure in offering our pages in aiding such a discussion, and invite those best able to

speak from experience and cultured taste to give their views of the subject.

A method adopted by Mr. Spiller in his early adventures in portraiture might in such case be tried with advantage as a means of reducing trouble; we refer to his mode of placing the sitter and camera a measured distance apart. If the plan of working to scale were adopted, opticians would not find it difficult to give the specific distances a lens would require to give images one-ninth, one-fifteenth, or one-twenty-fifth of the size of nature, and so save trouble to the photographer.

Without dogmatizing on this subject, we cannot but feel that the rendering of just proportion will confer on photographic portraiture an interest and a value which at present it fails to possess. Let us know that the portrait gives an impression of the complete man. Let the portraits of a growing family present an idea of that growth, and so tell the physical story of their lives from year to year. A series of such photographs of a growing life, dated and annotated, would form an important element in the history of an individual, of peculiar and pleasant interest to all the family.

THE SPECTROSCOPE AND PHOTOGRAPHY.

THE correspondence on the subject in the leading daily journal has been continued by an anonymous correspondent, who does not add much to elucidate the subject. When a controversy is carried on between A and B, nothing especial is gained by X exclaiming "I agree with B." Here is the letter addressed to the Editor of the *Times* :—

"SIR,—Having made a series of carefully arranged experiments at intervals extending over some years, in order to ascertain the action of the blue, yellow, and red rays upon sensitized surfaces of various kinds and colours, I can most heartily endorse the statements of Mr. W. J. Stillman in the *Times* of the 21st.

"With regard to coloured films, either on Daguerreotype plates or glass or paper, and whether stained by impalpable powders or the colours made chemically in the film—say, for example, of red, orange, or green—the result is that the impression has the appearance of being acted upon by the corresponding rays of colour, but is, in fact, merely an artificial substitution, upon which sometimes it happens that the light and the chemicals act as a mordant, but is no evidence whatever of the co-adaptation of the sensitized surface to the nature of the red, orange, or green rays of colour.

"For scientific data nothing short of a definite chromatic reproduction of the colour—say, of the solar spectrum—upon a homogeneous sensitized surface will have the slightest value in the minds of practical men.—I am, sir, yours, &c.,
AN OLD PHOTOGRAPHER."

PORTRAITS WITH MOTTO MARGINS, AND HOW TO MAKE THEM.

BY CHAS. H. EVANS.

IN the dull season of the year a little novelty will often bring trade.

The thing about to be described is one which has taken capitally with my customers, and therefore I recommend it, as it is easy and cheap to do, and, when tastefully done, recommends itself. The idea is to send the season's greetings with a photograph of the sender in the centre, and the *modus operandi* is as follows.

Take a sheet of cartridge paper, 25 by 20 (I used tinted crayon papers at first, but found that the cheap cartridge paper is equally as good, at one-fourth the cost), tack it on a flat board a few inches larger than the paper each way; then take some branches of holly, misletoe, or ivy, and arrange this around the edge of the paper, fixing it in

its place with a few tacks or pins. Now draw in the centre of the paper a line, either dome-shaped or oval, and arrange as before, in the line, some more green stuff; then take a soft conté crayon, and in the space between the outer and inner green strip do the greeting—A Merry Christmas, or the Compliments of the Season, or any other. I prefer using a crayon for doing the lettering, as when done it is a dead black, and as long as you preserve the shape of the letters, the rougher it is done the more rustic it looks. When this is done, then stick it up and photograph it.

After the negative is made and varnished, it is necessary to make a mask for the inside of the centre lot of evergreen. It may be done by printing a light impression on sensitive paper, and cutting out carefully the inside space of all, and sticking it on the outside of the negative, or by stopping out on the film side with black varnish. The latter plan is, to my mind, too troublesome. When, however, the centre is masked by either the above methods, the negative is then ready for use. Print a vignette about the size to suit the mask on the motto negative, and, when printed, place the picture on the motto negative, having taken care that it shall be in proper position, and protected by the mask. Print the margin, but not quite so deep as the portrait, and it is finished. If, however, you want to do without vignetting, the better plan is not to make a centre piece of green stuff, and to print the portrait in an oval or cushion shape and stick a disc that corresponds on the film side of, the motto negative.

PHOTOGRAPHING BRASSES IN CHURCHES.

BY WILLIAM BROOKS.

AT the last Technical Meeting of the South London Photographic Society, held at the Society of Arts, John Street, Adelphi, I briefly introduced this subject, and I have no doubt that many, owing to its brevity, did not thoroughly understand the true meaning of my communication, and, therefore, think it may be of interest to photographers, both amateur and professional, the latter especially, as it could be made a source of profit. I am indebted to Mr. Tom Brine, of Canterbury, for the idea, and by whose permission I introduced it at the Society.

I remember that I attended a lecture some ten or twelve years ago, at St. John's Hall, Penzance, on the subject of church brasses, and it was very interesting. The lecture was illustrated by a series of rubbings of all sizes: some were, I should think, nearly ten feet in length, and very interesting they were. Getting these rubbings involves an immense amount of labour, especially if of any size. I dare say most of my readers know and have seen these brasses in churches; for those who do not I will just give a brief description.

It was the practice for many centuries, when persons were buried in the body of the church, to mark the place of interment by letting a large engraved brass plate, deeply cut with likeness of the party interred, in full costume as worn in earth-life; and I have no doubt, in many instances, as a matter of portraiture, they are correct. As a rule, they generally bear an inscription setting forth the name of the party, his or her rank, and station in life; and sometimes these inscriptions are very quaint indeed. These brasses or inscribed plates are generally to be found in or near the chancels of churches, and are mostly covered up with coconut matting; and unless one goes and looks expressly, they pass observation. When man and wife are buried together, and have had issue, the family of sons and daughters, are indicated by having figures of them also engraved—the sons by the side of the father, and the daughters by the side of the mother, and by the costumes (even if the brass has been damaged, or the inscriptions removed or worn away) the date can be arrived at.

In most old country churches these brasses are to be

found; in some I have seen the pavement covered with them, dating back several centuries, and in a good state of preservation, and quite works of art in their way, and anyone almost fond of these curiosities can be allowed to take a rubbing by tipping the sexton, or pew-opener, or whoever may be in charge. To get a rubbing is not very difficult; it only requires a little care.

The best paper for the purpose is white lining paper; it can be obtained at almost any shop where paper hangings are sold, at one shilling per piece (containing twelve yards), which is not very expensive; and the other article which is required is heel-ball, used by boot and shoemakers to give the black gloss to the edges of the soles and round the heels of boots; it can be obtained at any leather-sellers' or shoemakers'; it is a waxy-looking substance, and is made in several degrees of hardness. It is best to get a few cakes of each; the softer does better for the heavy blacks, and the harder kind does better for the fine lines, if any, as it does not clog so much as the softer kind.

The mode of procedure is this: well sweep and dust the brass very carefully, for if any grit is under the paper it will cause a lot of annoyance, and will work unpleasantly; when this is done, cut off a piece of the white paper about one foot longer at top and bottom than the brass, lay it down (taking care to keep it well in the centre), and lay some heavy books (plenty are generally to be found about the church) at the top and bottom, to keep the paper in its place so as not to shift, and by passing the fingers over the paper so as to feel the outlines, go round it lightly at first with a piece of the hard kind of heel ball, so as to obtain the exact position of the figure or figures; when this is done, proceed to rub all over vigorously with the flat part of the cake until all the image is fairly visible; the heavy parts can then be gone over with the softer kind of heel ball, and using only the harder kind for fine working and delicate work, and the thing is complete. It can then be rolled up, and if any more be wanted, another can be proceeded with.

This is a capital warm job for cold weather, especially if plenty of elbow grease is used. This kind of thing can be done when photography in the winter months is at a standstill.

The rubbing so obtained is a negative, and not a positive, as the engraved or sunk parts of the rubbing are represented by white lines, and the flat or unengraved parts, representing whites in the rubbing, are intense black, whereas if the brass were new it could be seen as a positive; now the photographic part of the business steps in, and sets matters right.

Before any attempt is made at photographing the said rubbing, it must be carefully looked over and corrected, as it will be found that in the damaged parts of the original brass, where there has been no resistance, the paper has not taken the heel ball, and remains white; all these defects can be remedied by laying the rubbing out on a large table, and placing a piece of glass or hard smooth substance under, and just going over it with the heel ball again, taking care not to destroy or alter the drawing; or it can be retouched with some black pigment and brush. The rubbing is then placed flat on the wall and photographed, and the result will be a *positive*, and from this positive can be made any size negative required in the camera in the ordinary way by transmitted light: being a black-and-white subject, it can be enlarged to any extent without being offensive as regards texture. Should copies be required the exact size of the original, the rubbing can be used as a negative direct, and printed in either carbon or silver (I have seen some brasses not larger than one's hand). It has also occurred to me that this system might be made use of in various ways; for instance, in churchyards we find quaint inscriptions on tombstones, and inside of churches we find quaint inscriptions on monumental tablets; and at times photographers are called upon to photograph

monuments in churchyards of that red kind of granite so often seen with black, sometimes gold letters, which sometimes photographs so as not to be readable, and, unless all the inscription can be read, it never gives satisfaction to the client. Now a rubbing of the inscription can be readily made by the above means, and a negative made, and the inscription printed in, and a perfect whole is obtained, which does credit to the photographer, and gives satisfaction to all parties concerned; and I have no doubt that in many other ways this system may be utilised to obtain photographic representations that could not be obtained by ordinary means.

A PLEA FOR STANDARD SIZES IN PORTRAITURE.

BY JOHN SPILLER, F.C.S.*

In proceeding lately to arrange a series of scientific celebrities in my photographic album, I am met by a serious obstacle arising from the want of uniformity in the size of the heads, and it often becomes impossible to place side by side those whose official relations would otherwise dictate such a course.

Thus the head of Professor Tyndall, measuring in the photographic portrait nearly one and three-quarter inches, does not look well when shown alongside that of Faraday, taken on a much smaller scale (seven-eighths of an inch only); and the fine little portrait of Sir David Brewster, with head measuring barely five-eighths of an inch, appears altogether diminutive in such comparison. Even in the professed scientific series of the self-same photographer there is often the widest range in the scale of representation, and those which should go together cannot very well be placed in juxtaposition.

In "Men of Mark," this point appears to have been attended to with manifest advantage, and the frames of Woodburytype portraits shown at our recent Exhibitions have always borne this character of uniformity, and give a feeling of satisfaction which is, as a rule, wanting in the frames shown by many of our leading portraitists. The splendid series of Adam-Saloman's works shown in the International Exhibition of Paris, 1867, had likewise this charm of being all represented on the same uniform scale, and it was then possible to determine whether fully-grown or younger persons had come under the treatment of the eminent artist.

In many photographic establishments, arrangements are adopted which practically secure this very desirable uniformity in the scale of production, and special instructions on this head are no doubt attended to; but in looking over my albums, I am surprised to find that in very many instances of professional portraiture the members of a family have been taken without any regard to this common rule, so that children are made to appear bigger than their parents, and between wife and husband there is again a disproportion not founded upon fact.

It would be easy to adopt a rule for common acceptance, and the matter seems to me quite to justify a discussion of the subject, or even a conference, whereby a general agreement might be arrived at, so that for certain standard sizes—cabinets, cartes, &c.—a scale of uniformity should be the rule.

In measuring a large series of portraits, I find, for instance, that Bergamasco's cabinet bust vignette of H.R.H. the Princess of Wales appears to be taken on a scale of one-eighth natural size; whereas Reutlinger's famous series of actresses, and most of the American cabinets, are taken larger than this, or about one-sixth natural size. Then for carte portraits and vignettes all sizes are to be found, from one-sixth downwards; some have been printed from larger-sized plates, as doubtless those of Professor Tyndall and of the late Sir Francis Grant, whose head measurement on the photograph is one and five-eighths inches—much too large to look well in a general series where one inch is, perhaps, the average measurement.

Many years ago, when taking the portraits in my home

circle, I adopted a scale of one-tenth natural size, and I maintained that such a series, showing true natural relation, offers much to compensate for the manifest deficiency in artistic treatment which these pictures exhibit. They stand good in any arrangement, page after page showing elders and youngsters in family groups, and each of the proper size.

And now, finally, I have a confession to make, whereby it will appear that this system of working was most convenient to me, for I had when a boy only a quarter-plate French lens, the visual and chemical foci of which were not coincident, and therefore, to save trouble and easily secure the correct definition, I made a point of placing the sitter at a known distance from the camera (ascertained by a measuring rod or cord), and then screwing out the lens to a notch or scratch on the tube. In this way, not only was uniformity of scale secured, but I was always sure of getting the right focus—a matter of some anxiety with all workers in 1854, who did not happen to possess either a Ross or Voigtlander portrait lens.

COLLOTYPE ON ZINC PLATES.

BY PROF. J. HUSNIK.*

THE first attempts in the colloid process were made on metal plates, and the adhesion of the film was generally effected by the oxidation of the metallic surface. Since Albert introduced the use of glass plates, that of metal as a support for the colloid films has been entirely neglected, for it was not possible to obtain such even and firm films on metal plates as on plane polished glass plates. Obernetter has succeeded in overcoming the difficulties that attended the uneven surface of metal plates, and has for some time practised a system of colloid type in which he uses, as supports, zinc plates as thin as paper. Although he himself now also lays the chromated gelatine film on a glass plate, his former method is found to be of very great efficiency, and it is employed with advantage not only by Albert himself—more especially in his large size pictures—but also by several other houses. Such thin plates of zinc are used for glazing printing paper, and are found in the market with a perfectly even and almost perfectly polished surface. This circumstance considerably facilitates the manipulation, for it is only necessary to clear off with emery paper any grease or dirt that may happen to be on the plate, when the preparation can at once be proceeded with.

First Preparation of the Zinc Plate.—When the plate has been rubbed down as above described, it must be dusted with a short brush, and then once or twice washed first with pure water, and then with a three per cent. solution of chromic acid. The acid forms, with the metal of the plate, zinc chromate, which remains as a yellow coat attached to the surface, and this causes the perfect adhesion of the gelatine to the metal. After the solution of chromic acid has been allowed to drain off for some minutes, the plate, while still wet, is rinsed several times with pure water, and, when thus thoroughly moistened, it is coated with a filtered solution of one part gelatine in twenty parts water mixed with four parts spirit. The plate must now be held over a hot stove plate, or over a flame, in order to prevent the gelatine from setting too rapidly, and so that the solution may be distributed as evenly as possible. Afterwards the solution is drained off, and dried in a drying oven. Obernetter and Albert allow the zinc plates to dry in a horizontal position at a temperature of from 35° to 45° R.

My own experience is, that better results and more even films are obtained by suspending the plate at the centre over a square stick, placed horizontally, the ends hanging down on each side somewhat in the form of an arch, and allowing it to dry in that position. It is true that the film will flow for a few seconds longer from the top of the arch towards the ends; but if the temperature of the oven be

kept at from 50° to 55° R., the upper part of the plate will dry quicker than the lower, and this unequal drying will adjust the evenness of the film, so that it possesses everywhere the same thickness. For this first preparation, however, the position of the plate during drying is of no importance, as only a thin film is left on it; of so much the greater consequence is it in the succeeding operation.

Second Preparation.—The first film is not in the least degree sensitive to light, for no chromic salt was added to the gelatine; its object is to produce adhesion between the chromated gelatine film and the zinc plate. It would be quite possible to mix the first layer of gelatine with the chromic salts, and to produce it at once of the required thickness; but the results obtained are in every way better when the films are employed. The first layer is tanned by means of the zinc chromate and the other products of the decomposition—chromium chromate, for instance—and this tanning action penetrates the entire thickness of the film, causing dark spots in the prints; but a second layer combines with the first, so that both adhere firmly, and irreproachable prints are produced.

For the second layer, a hot solution of 100 parts in gelatine in 1600 parts water must be prepared, and mixed with 20 to 25 parts of some bichromate salt (ammonium bichromate is most sensitive) and one part chrome-alum; the latter substance must only be added slowly, or it will cause coagulation. The zinc plate is now placed on a horizontal table with the already prepared surface uppermost, and the solution is poured on it, and spread over it briskly with a brush; more solution is again poured on and rapidly drained off, so that all bubbles may be removed. After the greater part is thus drained off, the plate is hung up in the form of a bow in the drying oven at a temperature which must not exceed 45° R., nor fall below 35° R. Albert and Obernetter, before drying the film, warm it slightly, and then lay the plate on the top of a flat vessel covered with a horizontal metal sheet; ice-cold water is made to flow through this vessel, which keeps the metal-plate cold. In this position the gelatine sets evenly before it has time to run into the depressions of the plate; the plate is then dried in the oven at a temperature of from 40° to 50° R. As the first layer absorbs a portion of the water, the second layer is no longer liquid at the above-mentioned temperature, and dries very evenly. For my own part, however, I prefer drying by suspension, as I have already described.

When the second preparation is completed and the film thoroughly dried, the plate is exposed under a negative in the same way as an ordinary glass plate. The process of exposure is much facilitated by the zinc plate being so thin that it can be accurately pressed on to any kind of negative, whether it has a plane or a curved surface. In copying also, just as in printing on paper, the plate can be raised and bent over so as to give an opportunity for examining how the action is proceeding. So soon as the half-tones make their appearance, the exposure must be interrupted, and the plate developed with water.

When a print is to be taken from the plate, the latter must be carefully wiped on both sides, and more especially on the reverse, so that no grain of sand or dust remains adhering to it, for any such impurity will, in the press, be driven into the zinc, so that it cannot be used a second time. A perfectly clean lithographic stone is now coated with thick lithographers' varnish, the reverse side of the plate laid on it, and the whole pulled in the press; the plate will then adhere to the stone, and form a support for it. We are now in a position to proceed to inking the plate and taking a print from it. The rollers best adapted for colloid type printing are those found at the establishment of Romme Falbot, 68, August Strasse, Berlin. They are small glue rollers with only one handle; they do not tire the printer, and allow the work to be proceeded with rapidly.

* Photographisches Wochenblatt.

Films prepared by this method possess extraordinary durability; the plates are only worn out after very long use in the press, when the upper surface of the film begins to deteriorate. The low price of the materials employed permits of large plates being produced very cheaply, and there is no occasion to fear their cracking as with glass plates. If great care has been taken in printing, the zinc plate can be used again; it is only necessary to dissolve off the gelatine in a hot solution of alkali, and to rub down the plate afresh with emery paper. Albert has produced collotypes, by this method, a metre and more in length; the copy of the picture "Lohengrin's Farewell," was printed for the Art Society of Vienna for zinc plates only.

By the side, however, of the advantages that this process possesses over that with glass plates, it has one prominent defect: it sometimes happens that after the plate has been printed from continuously for four or five days small spots of oxide make their appearance, and the films become altered so that in these spots, too much ink is taken up. Before printing, therefore, the plate must be carefully gone over, and those spots where they occur in the light parts must be carefully wiped away. On this account it becomes necessary to use up the plate as quickly as possible, and to keep it perfectly dry while not in use, for in a dry state the alteration will not take place.

For moistening the plate, I recommend the well-known mixture of glycerine, water, common salt, and ammonia, and to employ it in a concentrated form; when the plate is once moistened with this mixture ten to fifteen prints may be taken from it, and the time that is usually occupied in wetting the plate after every pull can in this way be saved. With thicker films even fifty to eighty prints may be taken without a fresh moistening, but such films have not so fine a grain, and are liable to tearing.

On the other hand, this process affords the means of working with a quick running press and endless paper, for the printing plate can be bent round and fastened to the cylinder. The inking and moistening can be effected by several rollers on one side of the cylinder, while the printing takes place on the other side, when the endless paper comes into contact with the film. Albert has long ago come to the determination to have machines of this kind constructed, but is waiting until he can quite get rid of the spots of oxide which so often make their appearance. There certainly are means for, at any rate, weakening the effect of these spots, but none, so far as I know, that will quite get rid of them.

The addition of chrome-alum, as I have above recommended, has a considerable influence in this direction, and so has the moistening with the solution of glycerine and ammonia. If each spot be stippled with a fine brush dipped in a concentrated solution of ammonium oxalate, the spots will vanish for a time, but return again the next day, when they must be again treated in the same manner.

MASON'S INSTANTANEOUS DROP.

BY O. G. MASON.*

THE subject of instantaneous photography having recently claimed our attention in connection with emulsion work, and appearing to be on the verge of a larger and more practical field of operation, through this comparatively new process, I have thought that it might be interesting to some of the members present to review the methods which have hitherto been in use for this class of work, so far as the mechanical construction of the instantaneous drop or shutter is concerned.

Most of those who have practised in this department of our professional work are aware that many and various devices have been used to accomplish the result sought.

First, we have the ordinary and commonly used "drop,"

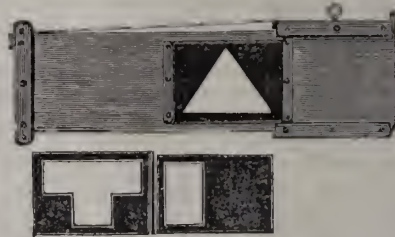
a thin piece of wood or metal so arranged before the lens as to shut out all light when elevated, and held in place by a catch or spring, the liberating of which allows the slide to fall, and in its passage across the field of the lens gives exposure to light through square or circular openings cut for the purpose, and again shutting out the light as it comes to rest at the bottom of the guides, as may be seen by the one which I now exhibit. When I had the device constructed, some twenty years ago, I knew of no better method. A year later, in my first attempts in photographing the sun, I found that there were many and serious defects in it, which were partially remedied by springs to accelerate the motion, and cushions to break the force of the concussion when the falling slide was arrested.

For landscapes and other classes of work in which were greater variety of objects possessing gradations of light from deep shadows to the brilliant glare of bright sunshine, the apparatus was yet very far from satisfactory; and to still further improve and add to its utility, I have devised and constructed the one which I now exhibit.

You will perceive that I have retained the main features of the old, before-described "drop." The modifications have been made in such direction as admit of easy and inexpensive construction, while the real value of the apparatus is increased many fold.

From the central portion of the slide, as you see, I have removed nearly one-third of the entire length, leaving just sufficient wood on the two edges to give the proper strength. At each end of this opening I fasten light guides or slides, so made as to receive and hold in position rectangular pieces of black cardboard, which we may designate diaphragms. A series of such pieces, through which any desired size or form of opening may be made, enables the operator to most completely control the exposure. By their judicious use he may increase or decrease the amount of light entering the lens from any portion of his subject.*

By the use of the rubber spring, so fastened to the body and slide of the apparatus as to be very easily detached or exchanged for others stronger or weaker merely by the turn of a screw, greater latitude to the speed of the slide for increasing or diminishing the time of exposure is given, which is also under complete control by increasing or diminishing the size of opening in the diaphragms. The arrangement of the spring together with the clamping screw for attaching the apparatus to the mounting of the lens, are such that the slide works most admirably in a horizontal position, in which position its peculiarities are best utilized.



With a diaphragm having a triangular shaped opening, with the apex of the opening upward, a short exposure may be given to the sky; and by reversing its position, a less exposure may be given to the foreground, for producing the effects generally termed "moonlight."

While an unbroken horizon or ocean view may be admirably treated by using a diaphragm with opening somewhat like a compressed Gothic capital letter T, a little practice will enable the operator to select forms of dia-

* The Editor of the *Bulletin* has illustrated the front side of the apparatus, and two detached diaphragms, in order that the reader may more fully understand its peculiar features.—O. G. MASON.

* Read before the Photographic Section of the American Institute.

phragms suitable for any subject. The diaphragms are very easily exchanged by pulling the slide a little past the position it occupies when ready for making an exposure, and they are held in position by the slide guides, from between which the opposite end does not entirely pass after the exposure is made.

The slide is held in proper position for focussing by a pin in the block or body portion of apparatus attached to lens mounting.

The slide is held in position with the rubber spring, extended ready for exposure, and a delicate wire spring; by a light pull upon a cord attached to this the exposure is made. By liberating the rubber spring, loosening the clamp screw, and turning the apparatus into a vertical position, it may be used like the ordinary drop slide, yet retaining the advantages of the variable diaphragms in cases when one side of the view is more brilliantly illuminated, or where one side or end of the scene has a higher horizon than the other.

Proceedings of Societies.

WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

The ordinary meeting of this Society was held on Monday, the 6th inst., at Bradford, Mr. JOHN HOWARTH, the new President, occupying the chair. There was a large attendance of members.

The CHAIRMAN congratulated the Society on its flourishing condition in the present dull times; it demonstrated that the members, like himself, had its interest at heart. He trusted that some arrangement would be made for a larger supply of material for discussion at the Society's meetings, and that all the members would work towards one end, so that the Society might take a leading place amongst kindred institutions.

Mr. Davis was elected a member.

Mr. J. CROSTHWAITE then read a paper on "Art in Photography" (see page 50).

Mr. E. WORMALD said the writer justly remarked that part of a man's art-education must be obtained by studying and comparing the works of other men. Such men as Michael Angelo and Raffaele were not above learning from others, even inferior to themselves; how much more, then, they, weaker men, had need to follow in their steps! If a man studied good models it would necessarily lead him to a better knowledge of art. He was of opinion that photographic art, in some men's hands, had reached a very high degree of excellence; and he had seen photographs which, as studies of light and shade, were equal to the best works of some of the greatest painters.

Mr. S. SACHS was of opinion that it was imperatively the duty of every photographer to make himself familiar with art, as much as it was to learn to expose and develop a plate. Excellent manipulation was not necessarily good photography; to produce fine art work a considerable amount of brain power, as well as technical excellence, was required. In old times a good chemist was considered a good photographer; now the public judged mainly of a man by the amount of artistic ability displayed in his work.

The CHAIRMAN thought most men commencing photography had some art enthusiasm, and probably had some incipient feeling that only required developing and educating. No one should be discouraged by seeing the splendid productions of some of the masters of the art, but rather consider it a part of his education. He thought that art education was necessary, and believed that a society was admirably fulfilling its duties in endeavouring to smooth the path for the earnest student.

Mr. W. T. BURROW endorsed the sentiments expressed in the paper as to the value of studying carefully the art productions of all ages, as by so doing anyone would doubtless achieve some degree of success.

Mr. E. GREAVES said the public required art education as much as the photographer; they had not the requisite appreciation of good work. Almost every photographer would have had experience of that by the number of rejected proofs which were exceedingly good, and the selection of indifferent ones. All this was very discouraging to anyone desirous of doing really meritorious work. He thought the public were to blame for the large amount of the poor work executed; when good work was placed before them they would not have it.

A vote of thanks was then given Mr. Crosthwaite for his paper.

Mr. WORMALD inquired whether the system of warming by hot water pipes or hot air produced the greatest condensation of moisture on the glass of a studio.

Mr. HAWORTH replied that the condensation of moisture on the inside of the glass of a room was caused by cold outside; and in the case of warming by hot water, the air in the room being charged with moisture it condensed on the glass, was evaporated and re-condensed, and thus the room remained constantly wet, the same air being kept in the room. If the room were warmed by hot air, the case was altogether different, as the constant influx of heated air forced out the same quantity from the room, which carried away the moisture with it, and thereby prevented its condensation. As he had previously pointed out, in a paper read before the Society, a wash leather or linen cloth hung in a room not warmed by hot air, would be found moist or damp, and glasses cleaned only a short time before being wanted, would be found to have a film of moisture on their surfaces. He (Mr. Howarth) could not conceive how a photographer could work with any degree of comfort in rooms warmed by other than the hot air system.

The meeting then became conversational, and was shortly afterwards adjourned.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

A MEETING was held in New York, November 5th, 1878, the President, H. J. NEWTON, in the chair.

The minutes of the last meeting were read and corrected, and, as corrected, approved.

The SECRETARY exhibited a lot of prints and negatives sent by Mr. R. E. Atkinson, of Troy, N.Y., for competition for Mr. Newton's prizes, but as the terms restricted the area to within twenty-five miles of the City Hall, he was outside the competing field. As there was no mark on the package it was necessary to open it in order to know to whom it should be returned. I took the liberty of opening it in the presence of the President, and we thought it might be well to show them to the Section; so I wrote to him asking if we might do so, and in his reply he says that they were not made especially for the purpose of competition, but were merely selected from his ordinary work. It struck me that these negatives, with the amount of finish put on them that is put on negatives in New York, would compare favourably with first-class gallery work.

Mr. NEWTON: I think they are much better than a majority of negatives that are elaborately retouched. The generally expressed opinion was that as plain work it was exceedingly fine.

Mr. WARREN exhibited to the Section some burnt-in photographs on glass and china, and explained the *modus operandi*, and the different metals used to produce the various colours.

Mr. MASON exhibited to the Section several instantaneous drops, and explained the working of those used in the production of the pictures shown by the President as follows (see page 58).

After the paper Mr. NEWTON said: At our last meeting there was some instantaneous work exhibited, made from dry emulsion plates. Since then I have been trying wet emulsion. I took some portrait emulsion and went last Thursday over to Mr. Mason's studio, at Bellevue Hospital, with it, and we made several exposures, but failed to get satisfactory pictures on account of over-exposure. The next day I went over and took a less sensitive emulsion, between thirteen and fourteen months' old, which required about double the time of exposure, and we succeeded in getting some very beautiful negatives. I meant to have brought some of the negatives with me tonight, but I have only brought the prints from them. I forgot to take the negatives.

The PRESIDENT exhibited several prints, which showed full exposure, illustrating the character of the negatives.

Dr. HIGGINS: The remarks I was about to offer were in relation to the employment of iron by photographers; its employment is universal almost, and almost entirely for the purpose of development. The salt that is used, commonly called copperas, also known by the name of sulphate of iron, and chemically known under the symbolic form of $\text{Fe SO}_4 + 7\text{H}_2\text{O}$ is a salt which we term the ferrous sulphate of iron. Iron, however, is multiple in its combinations—that is, it combines with acids in more proportions than one; in the combination just given it is bivalent. In another combination it is quadrivalent, although frequently thought to be trivalent. In this case we have Fe_2 joined with 3SO_4 , and represented symbolically by $\text{Fe}_2 3\text{SO}_4$. The salt is then termed a ferric salt. Now between these two salts we have another salt, and it is of that I would speak. This other salt is represented symbolically by $2\text{Fe}_2 5\text{SO}_4$, and is known pharmaceutically under the name of Monsell's solution, and is a sub-sul-

phate of iron. If one ounce of this solution, as purchased from the druggist under the name of liquor ferri sub-sulphate, is mixed with a pint of water, such solution answers the purpose most admirably, and better than anything I have used, of decreasing the intensity of the negative, contrary entirely to what the properly termed ferrous sulphate of iron does. There have been very many modes offered to the profession of decreasing the intensity of the negative. All of them are objectionable in some particular. When flowed upon a negative that is too intense, it will do its work slowly, gradually, and surely, with no fault of any kind, and will keep on reducing it, if left on long enough, until the entire negative disappears.

Mr. MASON: Do you use the solution before or after fixing?

Dr. HIGGINS: Either one; also upon a plate that has been fixed, dried, and put away, but not varnished.

Mr. CHAPMAN asked if this was applicable to a negative that had been intensified with mercury.

Dr. HIGGINS: I see no reason why it should not be, but have not tried it. By request of the members the Doctor showed the experiment, as follows:—A small emulsion plate was placed in contact with a negative in a printing-frame, and exposed to light from an ordinary gas jet for one second of time, the development resulting in a very intense negative. The plate was divided with a diamond for purpose of comparison, and one-half thereof reduced slowly, and entirely at option, to almost disappearance.

Talk in the Studio.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The next meeting of this Society will take place on Thursday next, February 6th, at the rooms of the Society of Arts, Adelphi, when Mr. J. Hazard will read a paper on "Gelatin Plates in the Studio," and Mr. G. Willis, Junr., will give a demonstration of his new platinum process.—H. GARRETT COCKING, Hon Sec., High Street, Lee, S.E.

COMBINATION GROUP OF LORD LORNE AND HIS WIFE.—A Canadian correspondent of the *Times* states that recently the Princess Louise, accompanied by Lady Macnamara, paid a visit to Mr. Topley's photographic studio, and sat for a portrait which is to form part of a composition picture to be prepared by Mr. Notman, of Montreal.

HARD TIMES.—A correspondent writes as follows:—"Noticing a word or two in the *News* relative to hard times, I recollect some two or three years ago, at Forest Hill, a man named D. Brown, carrying on the business of a photographer and chimney-sweep combined, one side of his card containing the announcement of one business, and the other side the other. Truly a veritable worker in carbon!"

ARTISTIC COPYRIGHT.—We understand that the Royal Academy have for some time been occupied with the question of artistic copyright. Feeling that the recommendations in the report of the Royal Commissioners with regard to the copyright in paintings and drawings are antagonistic to the interests of all artists, and, indeed, also to those of the public, a committee was appointed last year to inquire into the whole matter. This committee has, we believe, just presented to the council a report, which, if its conclusions meet with the approval of the general body, will no doubt be forwarded to the Government, and every endeavour made to prevent those recommendations of the commissioners which are considered injurious to the interests of art being incorporated in the forthcoming Bill.—*Academy.*

To Correspondents.

C. J. HALL.—We have published from time to time many articles on photographing on wood; but it is difficult to say which is best. You ask for one with a tough film, suitable for wood-engraving. Our own conception of what is best suitable for the engraver is quite opposed to a tough film, which would be apt to tear in engraving. It seems to us that the film should be—if a film be used at all—as thin and short or rotten as possible—practically a powdery layer, through which the graver would pass without being torn or disturbed, merely taking the line of cut. The best plan, in our view, of getting a photograph on the block for the graver is first to produce a photo-lithographic transfer, and so transfer the image in a fatty ink to the wood, as it would be to the stone for lithographic printing. If a film be used, the collodio-chloride process would answer well.

CARBON LANTERN.—We should think the liquid aniline colours would answer best for colouring carbon slides. Probably a coating of dilute albumen would make them take the colours easily.

W. W.—Genuine gold leaf is, we believe, in most cases, used for gilding the edges of cards, and no fear need in such case be entertained as to gold leaf injuring a photograph. We never heard of bronze powder being used for such a purpose, nor do we see that it could be so used. It would be ineffective, and detected at once. For common work in what is termed "gilding," a common leaf is sometimes used called "Dutch metal," and, being in leaf form, it might be used for edge-gilding; but it would be detected by its colour at once if submitted to a practised eye. Examine a parcel—say a score—of the cards, so as to get a sufficient surface of edges. As a rule, the Dutch metal is light coloured and brassy. What alloy of metal is used in making Dutch metal leaf we do not know, and hence we cannot with certainty say whether there would be risk to the photograph in its use. 2. We know nothing of the Albion Albumenizing Company except their old address. We, like you, look amongst the advertisements in the *Year-Book* for the address, and when we don't find it, fear something has happened. Their address used to be Brackenbury Road, Shepherd's Bush.

W. S. (Reading).—There is some difficulty in answering your question satisfactorily. It used, in the old time of dry-plates, to be regarded as a recognised characteristic of dry-plates that they were specially insensitive to imperfectly lighted subjects, and therefore undesirable for use in dull light. They were not, therefore, thought useful often for interiors. The modern rapid emulsion plates are, on the contrary, relatively more sensitive in dull light than wet plates. See a communication by Mr. Henry Cooper in our last issue. Here, then, is the difficulty in advising you. The best plates for an interior are the extra sensitive gelatine plates. But you require something suitable to unaccustomed hands. Probably, your best plan will be to purchase extra sensitive gelatine plates, and use great care in accurately carrying out the instructions. Such extreme care will often be found an equivalent for practice. You must bear in mind that the dark-room used for developing and for unpacking plates and putting them into the dark slide must be better protected from every trace of actinic light than is necessary for wet plate work. Use great care and precision in following out the instructions for development. You will find many hints in articles in our *Year-Book* just issued.

THE LUXOGRAPH CONTROVERSY.—Notwithstanding our announcement that we could not insert any more letters on this subject, we have received further communications from S. Lombardi and Messrs. Alder and Clarke. S. Lombardi "humbly begs the favour of a short reply as a foreigner," a form of appeal we do not like to resist, and therefore give the substance of his reply. He says the first, second, and third paragraphs of Mr. Faulkner's letter have already been proved "incorrect, erroneous, and false." And is this be so, why need anything more be said about it? When a thing is proved, there is an end, unless we adopt Dogberry's way of speaking: "Masters, it is already proved that . . . and it will go near to be thought so shortly." He proceeds to repeat the remark, already often reiterated, that Mr. Gregson and other witnesses testify to Mr. Faulkner's eulogistic expressions at the demonstration and that this was all the testimonial stated. In reference to Mr. Faulkner's allegation that he (S. Lombardi) is a partner in the Luxograph Company, he states that Messrs. Alder and Clarke simply rent rooms in his establishment, and that he bought and paid full price for his apparatus; and his testimonial was spontaneously given. S. Lombardi then reverts to the subject of Mr. Faulkner's method of producing backgrounds. But as this subject has no earthly connection with the question in discussion, we cannot devote space to it now. Whatever interest it had is long since past. Messrs. Alder and Clarke's letter chiefly consists in reiterating what has already been said. They repeat a portion of Mr. Gregson's letter. They point out that Mr. Faulkner admits offering £15 15s., a testimonial, and some specimens for the apparatus; and they also state that S. Lombardi is not a partner in the company. They conclude by affirming the *bona fides* of all their testimonials, and by stating that Mr. Faulkner, and not themselves, commenced the squabble into which Mr. Faulkner says he has been drawn. We have already devoted more space to the discussion than is fair to our readers; and we must definitely state that any further discussion must be conducted, if desired, in the columns devoted to business announcements.

L. CAMILLERI.—The double sulphate of iron and ammonia may be purchased of most photographic chemists, or it may be easily prepared. Take two ounces of sulphate of iron and one ounce of sulphate of ammonia; dissolve in four ounces of hot water, and set aside in a warm place, or place over a water bath to evaporate and crystallize. Or the solution may be diluted, and, with the proper proportion of acetic acid added, used at once for development.

CHARLES JONES.—The paper to which you refer is contained in the *Photographic News* for June 23rd and 30th, 1876, but not in any of the *Year-Books*. The back number of the Society's *Journal* may be doubtless obtained of the publisher; but is not kept by our publishers.

The Photographic News, February 7, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

DULL WEATHER AND SENSITIVE PLATES—PAINTERS AND PHOTOGRAPHERS, AND THEIR TREATMENT BY THE COPYRIGHT COMMISSIONERS.

Dull Weather and Sensitive Plates.—The man who looks after the sunshine at Greenwich Observatory has had very little to do lately. We doubt whether the Astronomer-Royal will report a single hour's sunshine during the week ending February the first, and if matters don't improve we may expect some ultra-liberal member, as soon as Parliament meets, proposing the reduction of the Estimates by that man's salary. We made some remarks, last week, upon the disadvantages of cold weather from a photographer's point of view, but the dull heavy period recently experienced is far worse to him than the cold. Fancy a printer required to furnish a gross of copies in a week, and he had such a week as the last to do them in. No wonder we have been making such a fuss about the electric light lately. We are so thankful for light of some kind this leaden weather that photographers have been driven to employ gas for making transparencies and multiplying negatives. Nay, in the absence of the sun, we see that some enterprising spirit has been making use of the moon. At the last meeting of the Manchester Photographic Society Mr. James Young exhibited a transparency which he had printed by the light of the moon in sixty seconds one January evening. The plate, he informed his audience, was prepared with gelatine emulsion, and exposed in contact with a negative in the ordinary way. It would have been interesting if Mr. Young had continued the experiment to see if the same sixty seconds' exposure would have given a picture upon a collodio-bromide film. As Mr. Alfred Brothers very truly remarked, it was a subject that had its importance, this moonlight photography, for it was the first instance, he believed, in which the moon had been employed for printing in this fashion. There can be little doubt as to the extreme sensitiveness of gelatine in conjunction with bromide of silver, and it seems more than likely that we shall see it introduced into the photographic studio for portraiture. In some cases its sensitiveness is reported to be not less than four times that of an ordinary wet plate, or, in other words, a four-second exposure with a gelatino-bromide film gives as good a picture as sixteen seconds with an ordinary wet collodion plate. This, no doubt, is under the most favourable circumstances; but in a country like this, where we suffer so much from dull weather, and may be without sunshine for a week or two, the possession of an especially sensitive film is, at times, very useful. No doubt the gelatine film requires a little different treatment to wet plates, and some additional precautions are necessary, such as the shading from light during the operation of sensitizing, and care in preventing the deposition of dust during development. Any dust particles floating about and attaching themselves to the gelatine film are certain to bring about spots and blemishes of a pronounced character, for particles once adhering are not to be removed. But this difficulty is readily overcome by many workers by keeping the plate during development submerged in solution, when, of course, it is quite impossible for any dust to become deposited. Unfortunately, many operators do not like this plan of working, being so accustomed to have the plate immediately under their eyes, and this cannot well be done unless the negative is held in the hand. At the same time, if the gelatine plate is to become of regular use inside the studio, and to take the place of the wet collodion film, as many believe will be the case, the operations involved in its manipulation will soon grow familiar to the ordinary worker. Certainly

its qualities, which render it so suitable for dull weather operations, cannot be passed over in a country like ours.

Painters and Photographers, and their Treatment by the Copyright Commissioners.—Photography was a good deal talked about at the copyright meeting the other day, held under the presidency of Sir Coutts Lindsay. The gathering took place at the Grosvenor Gallery, and may, therefore, be regarded an action altogether independent of the Royal Academy. Besides the chairman, Mr. Fripp, one of our foremost water-colour painters, Mr. Albert Moore, and Mr. Herkomer, the Paris gold medallist, took a prominent part in the proceedings. One of the questions involved was how far copyright in a painted portrait should extend. It seemed the general opinion of the meeting that the copyright of a painting should always remain with the producer, no matter whether he sold the original or no. To part with his painting should not mean that an artist parted with his copyright too. But there were to be exceptions to this rule, and one was in connection with portraits. In this case, it was held that the same rule should hold good as that framed for photographic portraits, Mr. Fripp moving "That the suggestion of the Royal Commissioners in relation to photographic portraits on commission should apply to all portraiture, and that the author of a portrait executed on commission should have no power to do anything in the exercise of his copyright without the sanction of the person who ordered it." Sir Coutts Lindsay justified this mode of looking at the matter in his speech in alluding to the difficulties which the commissioners meet with in defining copyright in portraiture. "They seem," he said, "to have been much puzzled to define what a portrait was, so as to class it in a different category to art compositions. It appears to me that the reason why the copyright in portraiture should remain with the commissioner of the picture is very simple. A man has a right to his own identity, either in a picture or otherwise, and it would certainly be unjust and unfair to publish the features of a man who wished to remain private." Then Sir Coutts Lindsay went on to show how the commissioners proposed a different rule for the photographer and the painter. The law which relates to painting the commissioners "propose to apply to drawings, lithographs, and to all other productions of the artist's pencil; but the laws they propose to apply to photographs are very different. They propose that the copyright in photographs should belong to the producers, except in the case of portraits, when it should belong to the commissioner who orders the portrait. "But there must be the same difficulty," continued Sir Coutts Lindsay, "in defining a portrait in photography as in painting, and I do not see how they can establish one set of rules for one art and a different set for another art." The argument of the commissioners, no doubt, in recommending that the copyright of a picture should be sold with the picture itself, was that they looked upon a painting and its copyright as indivisible, whereas in the case of photography it is not the original image (the negative) that is sold, but a copy of it. At the same time the reproduction of paintings, it must be remembered, is growing every day more and more frequent, and where previously but one was reproduced, twenty are copied to-day in one way or another. The consequence is there is a demand for copyright. A picture is purchased now-a-days as much for copyright as possession. And, as a rule, he who desires the copyright does not care for the original painting: the latter becomes the property of some nobleman or gentleman for his gallery, while the copyright is purchased by an art-publisher. Hence the separation of copyright and picture has of late become a matter of importance both to artists and to buyers of pictures. And as there is a tendency more than ever now-a-days to multiply paintings by engraving, etching, or photography, painters are especially awake to the value of their copyrights. Another reason may also be assigned, and that is that the painter, if the

copyright is separate from his work, is able to exercise some control over the mode of reproduction. He can prevent, for instance, the picture being reproduced in a publication or form of which he does not approve, and this is a point of some consideration; whereas if you part with everything when you sell your picture, you can do little in this respect. One other point which will strike photographers in reading the report of the meeting is the kindly manner in which the president, Sir Coutts Lindsay, speaks of photographic art and acknowledges its value.

GERMAN CORRESPONDENCE.

AWARDS OF THE INTERNATIONAL EXHIBITION OF PARIS, 1878
—NEW RAPID PROCESSES—NEW PHOTOGRAPHIC APPARATUS—TENT CAMERA—PROGRESS IN PHOTOGRAPHIC LENSES—DEATH OF DR. E. STEINHEIL.

BY DR. VOGEL.

DR. VOGEL writes to our Philadelphia contemporary, and says:—

The Exhibition is closed, and the list of awards was finally published about a fortnight before. Notwithstanding the immense quantity of awards, the general sentiment is an unsatisfactory one (of two hundred French exhibitors, one hundred and seventy obtained an award of merit, as also every one of thirty-three Austrian exhibitors). The disappointment has its reasons. Mr. Levitzky, vice-president of the photographic jury, relates that still in the month of October decisions were made by a non-authorized jury, changing the decisions of the regular jury. Three more gold medals were awarded, and one of them by special influence of the Grand Duke Constantine of Russia.

Mr. Seavey, the first background painter of the world, is not among the fortunate. He had to be contented with a bronze medal, although his work and qualities justified the expectations of the highest reward.

After the excitement caused by the Exhibition, the rapid processes are the principal subject of attention. First of all was the lightning process of Boissonas and Klary, which has proved to be a failure; then came M. Richard, whose process has carefully been tried in Berlin, with his own chemicals, and found to be not a particle more sensitive than my own chemicals. There are also Mr. Schwerg and Mr. Fricke. All these processes are kept secret, and are offered for sale.

At a meeting of the Society for the Advancement of Photography, M. Ball has described a method with which he thinks to reduce the exposure one-half. He connects two silver corners of the plate-holder with the two ends of a galvanic element, so that a stream goes in the diagonal direction of the plate. He has shown proof plates, one-half of which was exposed in the usual manner forty seconds, and the other half only twenty seconds, by the application of a galvanic stream, which spoke well for the usefulness of his method. I have tried it, but not with entire satisfaction, which may, however, be due to the insufficiency of my stream. His ideas are certainly worth a trial.* We had, therefore, in all five rapid processes, and the search for the same is still so decided, that it is not at all astonishing that one of our members asked, at the end of the meeting, if, during the same, "no other new processes were invented."

The principal object of this investigation is the abridgment of exposure. Parallel with it go the experiments with gelatine emulsion. The gelatine emulsion plates by Bennett and Kennett are exceedingly sensitive, and surpass the wet-plate in regard to rapidity. At present photographers are not in favour of this proceeding, as the preparation of gelatine emulsion plates is a very

inconvenient thing. However, they have the advantage of allowing preparation beforehand, and keep their sensitiveness for a long time. It would be possible to manufacture the plates on a large scale and put them in the market, which would save to photographers the inconvenience of preparing the plates. The general use of a process is not only dependent on the rapidity with which it allows to work, but principally on the quality of the work turned out; and I must say, in regard to this, that the proportions in shading are inferior to those of wet plates.

Four new photographic patents have recently been granted, as a proof of our assiduousness. There is one for a method of making enlargements on linen, one for a portable photographic outfit, one for photographic transfer paper, and finally one for transferring. Two applications for other patents have been made, one a hot burnishing machine, and one for a photo-chemical printing process. That everything is not new does not need to be mentioned. The portable outfit, for instance, resembles much a construction known under the name of "tent camera." Especially fresh to my mind is a construction which Davis exhibited in London in 1862. The improvement of the apparatus is the combination of tent and camera, which seems to be very practical and compendious as long as you look at it; however, as soon as you are going to work, the thing changes its appearance. In landscaping, for instance, where there is the camera to be transported, lowered, and inclined in all directions, it will be a very inconvenient thing to move all the bottles and dishes with it. It is a very unhandy whole, which does not promise much of a future.

Another process, not patented yet, is an improvement on portrait lenses, operated by Voightlander. In consideration of the progress optics has made during the last thirty years, it is astonishing how much the portrait lens has kept its old form, originally introduced by Petzval. The sole change ever made on it has been operated by Dallmeyer, who simply turned the back lens and added a construction by means of which the two lenses which compose the back lens may be put into different positions. He thus hopes to obtain the depth of the focus. The efforts made in Germany for the improvement of the Petzval lens were equally visible. A fault with the same is, that the two back lenses have to be separated, and are thus the cause of many optical faults, loss of light by reflection, &c., caused by a disadvantageous position of the same. I have worked with lenses which gave a bad picture, especially with regard to sharpness of outlines; I improved them by changing the thickness of the paper put between the two lenses in question, and found thus in an experimental way what distance was the best. Several opticians have tried to introduce lenses in which the two back lenses were cemented together. Busch exhibited one of these in Vienna in 1873. It worked very nice, but has never been put in the market. Steinheil made similar trials. Voightlander has sent me recently a portrait lens with a two and three-quarter opening; it was a portrait lens of an old construction, for carte-de-visite and cabinet size, of ten-inch focus. At the same time he sent me a back lens, with the prescription to replace with it the back lens of the objective in operation. The effect was wonderful. The focus was reduced to seven and a-half inches, and the light on the plate proportionately strengthened. I found that a plate required twenty seconds' exposure with the new lens, whilst the old ones required thirty-five. Sharpness and depth of focus were satisfactory.* Whoever possesses a Voightlander lens need only to buy a new back lens, in order to shorten the focus considerably. This may be of some value to practical photographers. The new back lens is composed of two lenses cemented together, and nearly symmetric to the front lens; the consequence

* The use of a galvanic current during exposure is a very old idea in photography, having been tried in Daguerreotype days with the sensitive silver plate. It was not found, however, of practical value.—ED. PHOTO. NEWS.

* Mr. Dallmeyer made a similar experiment some years ago, but found that the shorter focal length required by the front, as compared with the back combination, to cure barrel-shaped distortion, introduced so much astigmatism that it had to be abandoned.—ED. PHOTO. NEWS.

will be that the new instrument will give much more correct drawings than the old one. It is still a question if this improvement is applicable for larger instruments, as I tried until now only a small size. Another lens recently tried by me, which is not manufactured for the trade, is especially designed for the reproduction of drawings, and for the taking of landscapes. It has a peculiar construction. It is composed of two systems of lenses two inches apart, each one of which is composed of two lenses. The component parts of every system are a nearly plano-convex crown-glass lens, which has four and a-half inch radius on the convex side, and a nearly plano-convex flint glass lens of six-inch radius on the convex side; both lenses are not cemented together. The concave side of the flint glass lens is facing the nearly plane side of the crown-glass lens. I obtained some very good results with it, which prove that in the line of lenses still more important improvements are possible.

We have to regret the death of another celebrity of photographic art. Dr. E. Steinheil, member of the firm of E. and A. Steinheil, of Munich, died on the 11th of October, on board of the steamer *Silesia*, on his way to St. Thomas. He died of apoplexy, though the journals called him a victim of the yellow fever. He intended to go to South America for the sake of his health, and in order to apply himself to the study of butterflies (an old passion of his). Dr. Steinheil had made this trip several times. He is buried in the churchyard of St. Thomas. The optical institute is carried on by A. Steinheil, brother of the late E. Steinheil.

TO MAKE VIGNETTERS BY MEANS OF GELATINO-CHROMATE.

BY DR. J. SCHNAUSS.*

THERE are so many different kinds of vignettters now offered for sale by dealers, that I was induced to try and prepare some for my own use, and by following the method I succeeded in obtaining what I required. From a good positive in black or some non-actinic colour a number of negatives of different sizes are taken, but in doing this the image on the ground glass plate must not be focussed too sharply. Or where suitable vignettes are already at hand, the negatives can be taken from them directly by any convenient method; either a collodion emulsion may be used, or chromated gelatine as described below. To prepare the latter a solution is made of five parts pure white gelatine in sixty parts of water, to which two parts of ammonium bichromate are added; and, when the film is afterwards to be drawn off, a few drops of glycerine may be introduced to make it less brittle. After filtering this solution, pour it, whilst still hot and fluid, on a well cleaned glass plate; care must be taken to have this plate placed in a perfectly horizontal position, which is best effected by resting it on a larger plate that has already been carefully levelled. The gelatine solution must not be allowed to run over the sides of the plate, or the film may turn out to be too thin; to prevent this give the plate a raised edging of wax. When the chromated gelatine has set, let the plate dry completely in a dark and moderately warm room. Artificial heat should not be used in drying, especially when the film is afterwards to be drawn off; when this is the case the plate should first be rubbed over with powdered talc or diluted ox-gall, and then on heating the film easily flies off.

On plates prepared in this way the negatives are now copied, and that as intensely as possible by a long exposure. The copies cannot be too intense, provided that the negatives are quite black in the centre of the aperture. When they have been sufficiently exposed, wash them several times in cold water, and finally with distilled water; then plunge them, while still wet, into a solution

of one part lunar caustic in fourteen parts water acidulated with one part acetic acid.

It will now be seen that the film is coated with a precipitate of silver chromate, which is in the highest degree non-actinic, and is much denser towards the sides of the plate. Should there be a trace of chromium salt left, as is often the case, it is of no importance; on the contrary, when really intense vignettters are required, it is not necessary to thoroughly wash out the chromium salt. But in order to obtain the requisite transparency in the centre of the plate, the whole of the silver nitrate must first be washed out, and then a soft and strong hair-brush dipped in dilute nitric acid: this is passed over the plate with a few rapid strokes in a circular direction from the centre outwards up to the commencement of the shading, and the plate is then quickly rinsed. With a little skill a great variety of effects may be obtained in this way, and any required degree of shading.

After drying, the film is coated with a little castor oil collodion, and then, if it be desired to draw it off, with a hot twenty per cent. solution of gelatine to which a small quantity of glycerine has been added. The plate must be laid horizontal, and the addition of a little alcohol to the solution facilitates its flowing. When the gelatine is set, the plate is placed for a couple of days to dry, and it is again coated with some thin collodion; the edges are then cut through, and the film is drawn off.

COPYRIGHT IN WORKS OF FINE ART.

A MEETING was held on Saturday last, in the Grosvenor Gallery, to consider the contemplated legislation in relation to the copyright in works of fine art. The following report is condensed from the *Times*, which also devotes a leader to the subject:—

Sir Coutts Lindsay, by whom the meeting had been invited, was called to the chair, and proceeded to explain its purpose. He understood that the Government intended immediate legislation on the subject. At present the law was very anomalous, and its effect was to give neither the purchaser nor the producer of a picture any claim to the copyright except by special contract and in the case of works done on commission. He went on to say,—That such a state of things should exist seems to me to be unworthy of the legislation of England, and it is high time some more complete form of law should be promulgated. I find among the Commissioners—first, the president who represents the Government; several lawyers; two literary men, Mr. Froude, and Mr. Trollope; a scientific gentleman; a musician, Sir J. Benedict; but there is not a man having any interest in art. No representative of the interests of art was nominated on the commission—a most unfortunate circumstance, and one which, probably, has affected the resolutions of the commission very injuriously in the interests of art. The laws respecting painting, drawing, photographs, and sculpture have been framed at different times, and, therefore, there is little or no uniformity in them. There is great disparity in regard to copyright in them, both as to the time they enjoy protection and also in other divisions of the matter. Hitherto artists have enjoyed copyright during life and seven years after death. With regard to sculpture, it has been fourteen years after production and fourteen years after if the sculptor is then alive. By the present law an artist sells a picture without having the copyright reserved to him, he loses possession of it, while the right does not vest in the purchaser unless there is a written agreement to that effect. This copyright becomes the property of anybody who wishes to make use of the idea which ought to belong to the artist. If a painting or art work is done on commission, then the work belongs to the commission, and ceases to be the property of the artist. There is no doubt fresh legislation is needed on that point. Such an anomaly has never before existed in English law, and I think I express the feeling of the meeting in saying we are grateful to the Government for proposing to legislate. But it behoves us and the societies to watch over our own interests, and it is for that purpose alone that this meeting will be of utility to art. We are bound to watch the action of the Government, not in an inimical spirit, but to give such advice as we think we are capable

* *Photographisches Archiv.*

of giving to direct legislation in the interests of which the commissioners have taken some pains to ascertain what are the feelings of artists by examining different artists. The commissioners state that one of their chief difficulties was the proper right of copyright in portraiture. They seem to have been much puzzled to define what a portrait was, so as to class it in a different category to art compositions, and asked many questions not tending to elucidate the matter. It appears to me that the reason why the copyright in portraiture should remain with the commissioner of the picture is very simple. A man has a right to his own identity, either in a picture or otherwise, and it would be certainly unjust and unfair to publish the features of a man who wished to remain private. It is the identity of the man which ought to be protected, and not the picture, and that seems to me to be the simple rule which the Legislature must follow in legislating with respect to portraiture. The law which relates to printing they propose to apply to drawings, lithographs, and all other productions of the artist's pencil; but the laws they propose to apply to photographs are very different. They propose that the copyright in photographs should belong to the producers, except in the case of portraits, when it should belong to the commissioner who orders the portrait. But there must be the same difficulty in defining a portrait in photography as a painting, and I do not see how they can establish one set of rules for one art and a different set for another art, especially as I give that difficulty as one of the chief reasons why they legislate upon art to the disadvantage of the artist. Another objection to the proposed legislation is that they insist upon compulsory registration of all works of art when sold. Such a proposal seems to me to be absolutely preposterous. Artists produce important works where registration is perfectly advisable, but they also produce what are vulgarly called "pot-boilers," whose registration would not only be a heavy tax on the artist, but a most unbearable burden in other respects, and I think the proposal would be quite unworkable. I do not think I have said that the Commissioners propose to make the enjoyment of copyright co-equal in literature, art, and the drama, viz., during life and for thirty years after death. We cannot be too grateful on this point for the proposal of the Commissioners. In dealing with copyright as affecting the purchaser and producer, had the Commissioners included some artist or some professional man who understood the whole rights of the case, I do not think they would ever have made there unfortunate proposal, for it would be understood that there are two properties in a work of art—one consisting of the picture, and the other of the idea. When a painter parts with a picture he parts with a valuable production; but if he is forced at the same time to part with the idea, he parts with that which may be of infinitely more value to him than the canvas he has worked upon, for it is something which must be, and often is, useful to him for the rest of his life. It appears to me a most cruel form of legislation to make a man part with two different properties in one sale. It is contended by the Commissioners that any artist may contract himself out of the legal arrangement which they propose, and no doubt that is the case; but that does not alter the general course of law, nor does it alter the general disposition of the purchase and sale of that property. There are two classes of purchasers of art productions; one purchases a work for his own peculiar pleasure and benefit—he may be called the amateur, if you please—and the other is the dealer, who purchases for the profit of re-sale. The amateurs form the largest and most important class, and a class much more to be encouraged than the other. If the Commissioners proposal became law the amateur class would become possessed not only of pictures, but of the interests of artists in them, and in the case of piracy of such pictures the artist would be unable to protect himself or his work, as the duty of protection would devolve on the purchaser. In this case it appears to me that the artist would get no sort of protection whatever; for if he claimed protection against piracy or photography, not one in a hundred of the *dilettanti* purchasers of works of art would take the trouble to protect him. The dealers, I take it, are very well able to protect themselves, and I do not understand why the Government should be so anxious to put them on a bed of roses, when they are so well able to put the artists on a bed of thorns. The Commissioners, in forcing on the artist the registration, would impose a very onerous duty; whereas, if the copyright was vested, as it should be, in him, the necessity for registration would immediately drop. A resolution, therefore, will be submitted to you to that effect. Another important point which the Commissioners do not seem to have seen is the

question of *replicas*. It is a subject of some delicacy, and, as an artist myself, I would insist that all artists should have the right to reproduce the ideas which they have embodied on canvas, but that identical *replicas* should not be allowed, for the simple reason that a reproduction which is identical must damage the identity of the first work, and, in doing so, diminish its value. But that an artist should be deprived of the power of using his finest ideas because he has already embodied them seems to be preposterous, and cannot but be most hampering and injurious to the interests of art, not only of the present day, but of a thousand years hence.

Mr. FIELD then recounted the history of artistic copyright legislation from Hogarth's time to the present day, and remarked that painters only asked that they should not be placed in a worse position than a mechanic with a box of chemicals.

Mr. RICHMOND then moved:—"That, while welcoming the report of the Royal Commission as exposing the grave defects of the existing law of artistic copyright, and recognizing the value of many of its recommendations, this meeting is nevertheless of opinion that, in regard to its main provisions, the interests of the public could be as adequately secured by means less injurious to the interests of art."

Mr. ALBERT MOORE seconded the proposition, and it was carried unanimously.

Mr. A. D. FRIPP, seconded by Mr. KEELEY HALSEWELL, moved a resolution to the effect that, except in the case of portraits and *replicas*, the right of reproduction should remain with the painter, unless he specifically parted with it.

Mr. A. LUCAS, seconded by Mr. SADLER, moved an amendment in favour of the recommendations of the Commission.

The amendment was lost, and the original resolution was then carried all but unanimously.

Mr. HERKOMER proposed the third resolution:—"That while admitting the value of registration as applied to forms of art like photography and engraving, which are susceptible of exact and perfect mechanical reproduction, we are nevertheless of opinion that it would prove a vexatious and ineffective mode of protection for the design in works of imaginative art, of which the value depends upon the handiwork of the artist himself in the expression or embodiment of such design, and which are, therefore, incapable of precise verification by means of description or copy."

Mr. LEIGHTON seconded the resolution, which was carried, there being only one dissenter.

Messrs. Fripp, Richmond, A. Moore, and Herkomer were nominated as a deputation to bring the resolutions of the meeting to the notice of the Government, and the proceedings ended with a vote of thanks to the chairman.

In a letter to the *Times*, after the meeting, Mr. Arthur Lucas, upholding the view of the commissioners in opposition to that of the painters, says:—

What the Royal Commissioners have sought to do is, not to deprive painters of their copyright, but to express clearly that this untenable distinction between conception and embodiment shall not exist, and that copyright shall attach—where it is only logical to seek it—in the embodiment or picture, and that without it be expressly reserved it shall belong to the purchaser and follow the ownership of the painting.

It cannot be too emphatically stated that the interests of painters and the body which I represented at the meeting of Saturday last, the art publishers, are absolutely identical. We, the publishers, distinctly desire that artists should derive every possible benefit from the eouage of their brains, and we wish to see the laws defining their rights clearly expressed in our statutes. There are, however, two distinct kinds of copyright—firstly, the right to reproduce by engraving, or some of the more mechanical processes, which applies only to a very small percentage of pictures; and secondly, the right of an artist to repeat, or make replicas of his own works, which applies, of course, to every picture. It is this second right which so many artists are so loth to use, and here it is that their difference with the recommendations of the Royal Commissioners is most accentuated.

My own personal view is that the strict morality of a replicas is at least extremely doubtful; many of our best painters utterly condemn it. It at least shows a poverty of conception, and is defensible only where the purchasers, both of its original work and its repetition, are each made cognizant of the existence of the two or more works.

FINE ART COPYRIGHT.*

THE artists who assembled in the Grosvenor Gallery on Saturday night were very much of one mind, but they have failed to convince us that the balance of argument is not strongly against the propositions they met to advocate. The question most seriously agitated by them turns on the right of reproducing pictures. A painter paints a picture and sells it to another man. The artist and the purchaser may make any agreement they please between themselves touching the subsidiary rights connected with the picture. The picture itself belongs, of course, to the purchaser; but the artist may stipulate that he shall retain the right of making and selling copies of it, whether on a reduced scale and in a different medium, or as exact *replicas* of the original production. The artist may stipulate, again, that he shall have the right to authorize engravings, etchings, lithographs, photographs, or other forms of translation; and if there are any rights relating to a picture other than that of its direct possession and enjoyment, the artist may reserve them to himself. On the other hand, the agreement between the two may be that the purchaser who acquires the picture by his purchase shall simultaneously acquire all rights connected with it such as we have described. The law allows the utmost freedom of contract between the two, and there is no intention on the part of any one to interfere with this freedom. The Copyright Commission never made any suggestion to limit it. What, then, is the question that agitates the artists? It is this:—Suppose a picture bought and sold and nothing said about copyright, whose shall the copyright be? In the absence of express agreement, in whom shall the copyright be vested? The law is now in that absurd condition that in the case supposed the copyright belongs to neither the one nor the other; it may be said to be in the air, for it can be asserted against nobody; but there are very few, if any, who think that the law should remain in this state. Where, then, shall the rights to which we have referred be vested? The Copyright Commission recommend that they should go with the picture and belong to the buyer, unless the seller expressly contracts that they shall be reserved to him. The artists at the Grosvenor Gallery are all of opinion that they should remain in the seller, unless the contract expressly includes them in the purchase. They make, indeed, two exceptions to this principle. They think, and it is very good of them to think it, that if a man gives an artist a commission to paint his portrait, the painter ought not to be allowed to reproduce it, or to have it engraved, lithographed, or photographed, except with the permission of the man himself. Also they think that the right of a painter to make *replicas* of a picture he has sold should not entitle him to reproduce it so perfectly "as to imperil the identity of the original work." Subject to these two limitations, they hold that an artist selling a picture must be understood to retain all rights of reproduction, unless it is expressly agreed that they go with the painting.

There is a preliminary question whether the law should recognize and protect such rights of reproduction of a picture as we have described. We look with great jealousy on all proposals to extend the law of copyright; but it must be admitted that these privileges of reproduction and translation are capable of being made subjects of contract, and are, in fact, often transferred for valuable pecuniary considerations. Consequently, the sanction of the law can hardly be withheld from what thus acquires, by the agreement of men among themselves, all the attributes of property. Sir James Stephen, who was one of the Copyright Commission, disapproved of copyright in pictures, "because a picture has a value of its own which is not affected by its being copied, and copies of it are themselves works of art of various degrees of merit;" but a picture may have two or three springs of value, and the recognition of one is no valid reason for refusing recognition of another. Sir James Stephen, somewhat strangely, does approve of copyright in engravings, although the foundation of a copyright in an engraving is the copyright in the picture from which it is engraved. These questions must be settled by facts. Mr. Millais paints "The Order for Release." If he can convey to a publisher the exclusive right of engraving it for a limited number of years, that right would sell for a considerable sum. If he can retain the right of copying it, the right would be worth a considerable sum. As these rights can be defined and

appraised, there seems no adequate reason why the one, like the other, should not be recognised by the law. We may assume they will be recognized, and will return to the question whether they should be vested in the purchaser or remain with the artist in the absence of an agreement. Many may be disposed to ask whether the point is of any importance, since it can be settled by agreement. The eager interest of artists in it shows that it is of some importance. The fact is, they think that if the question is once mooted between an artist and a purchaser, the latter will insist upon retaining all rights the law gives him, but if there was no necessity to mention it, the purchaser would rarely be alive to it. The Copyright Commissioners said "the evidence shows that persons buying pictures do not in general think about the copyright, but if the subject happens to be mentioned they are generally under the impression that the copyright is included in the purchase, and are astonished if they are told it is not." The artist knows all about the point; the purchaser does not; and if the law gave the artist, in the absence of agreement, all rights of reproduction, the purchaser would not get all that he thought he was buying. If the rule of law is the other way, the artist will never lose a right without knowing it; if the rule is as the Grosvenor Gallery meeting desires, the purchaser will constantly fail to acquire rights he thinks he is purchasing. This of itself appears to us conclusive in favour of the recommendation of the Copyright Commission. Throwing upon the artist the burden of stipulating for what he wants gives him the opportunity of obtaining every power he desires without injustice to any one. Other arguments founded on convenience may be suggested. It is plainly not very convenient that the right of possession of a picture should be in one person, and the right of multiplying copies of it in another. This separation of rights may be created by agreement, but we want some positive argument of considerable cogency to support the suggestion that the law should separate them on every sale. The exceptions the artist themselves have been constrained to make in their own principle afford further arguments against its adoption. They are obliged to allow that a man who paints a portrait on commission should have no rights of reproducing it, except by express authority; and why should a man who paints a scene in a park on commission from its owner have the right of reproducing it? Again, they say that a *replica* should not be permitted "to imperil the identity of the original work;" but this rule would still throw upon the possessor of the original work the necessity of taking action, and of proving that the *replica* exceeded allowable limits of reproduction. Under the contrary rule, whereby the artist could not reproduce what he had sold except by authority, he must apply for authority; he must satisfy the possessor he is not going to confuse the value of his property—in a word, he must vindicate the innocence of his action. On every ground the proposition of the Copyright Commission commands our preference.

The artists in the Grosvenor Gallery had a great deal to say about the proposal of the Copyright Commission on the subject of registration. They did not question "the value of registration as applied to forms of art like photography and engraving," but they denounced it when applied to pictures. What do the Commissioners recommend in this matter? They say that as long as the property in a picture and its copyright are vested in the same person no registration whatever is necessary, but when these are separated there should be compulsory registration of the agreement by which copyright is separated from possession, coupled with a brief description of the nature and subject of the work the subject of the contract. Registration, therefore, would never be required, except when one man owns the picture and another has the right of multiplying copies of it. It is then recommended simply for the purpose of proving the right of the person entitled to make copies: and as this is done for his convenience, its compulsory character might be dropped if he objects to it. This would, however, be no boon to the artists. If they got their own way and the privilege of copyright was reserved to them in the absence of agreement, they would be obliged, if they wished to prevent any person interfering with their rights, to establish that precise verification of their work which they resolved on Saturday was difficult to the verge of impossibility. Registration would help them to do this: but if they would rather postpone all proof of title till a question arose in a court of law there is no reason why they might not be permitted to have their desire. All this is, however, subsidiary to the main question that agitates them, and we have intimated with sufficient clearness how we think that must be decided.

The Photographic News.

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COPYRIGHT IN PICTURES.

WE print on another page an interesting report of a meeting called to consider the contemplated amendment in the law of copyright in works of fine art; we also print a leader which was devoted to the subject in the *Times*. The subject cannot fail to interest photographers, both in its relation to paintings and to the productions of their own special art. That the existing Act on the subject is unsatisfactory in many points cannot be denied. It is not only clumsy, complicated, and obscure in many respects, but it is also unsatisfactory in some of its enactments. As the law at present stands, unless written agreement is entered into defining the ownership of the copyright, no property in the idea or design of the picture accrues to anyone. The artist loses that property, whilst the purchaser of the picture does not acquire it; and neither would have a remedy against anyone else making unauthorized copies. The recommendation of the Royal Commission appointed to consider the subject is that the copyright in a painting shall pass with the sale of the picture to the purchaser, unless a written contract to the contrary be entered into at the time of sale. To this provision the artists very naturally object, as they consider that the design or idea of a picture having a distinct value of a negotiable kind apart from its first embodiment on the canvas or other material, should vest in the creator of that design in the absence of any definite sale thereof. The copyright of a picture, embodying the right to multiply it by engraving, photography, or other means, is often the most valuable part of the property, and as it should vest in some one apart from any agreement, naturally, we think, vests in the author.

Curiously enough, and satisfactorily also, the law to be applied to photographs is, as we understand Sir Coutts Lindsay, to be different to that proposed for paintings. It is proposed that the copyright in photographs shall belong to the producers, except in the case of portraits, and the copyright in portraits is to belong to the person for whom the portrait is produced. This, at first sight, seems to be legitimate enough. Most persons will assume that a man's copyright in his own portrait is beyond question. But there is an aspect of the subject in which this dictum is decidedly adverse to the portraitist. A portrait by an accomplished artist is not simply a mechanical facsimile of a face in which the owner of the face may be asserted to have an indefeasible copyright. It is something more: it is a work of art, in which all that is artistic belongs to the portraitist. If by producing this work of art he acquire no sort of right in the multiplication of it, if one copy produced and sold may, without hindrance or check, be produced by any mechanical workman in exact facsimile, the original artist is surely seriously injured. His thought

and skill as an artist cannot reasonably be remunerated by the sale of a single copy, and he ceases to be fairly paid for his work.

But this is not the only injury from which he suffers. We must here re-affirm a position we have often maintained as to the essentially artistic possibilities of photography. The true artist in photography will stamp his impress upon his art as decidedly as the painter. A connoisseur in photography will recognize at once by its style a Rejlander or a Robinson, an Adam-Salomon or a Blanchard; and let a portrait by a great master in photography be reproduced by a cheap mechanical copyist, the style and characteristics will remain. If, however, such copies are imperfectly reproduced, as they generally are, the style of the master will suggest identity with his work, and the fading and other imperfections of printing will attach as a stigma to his work. He will thus be not only robbed, but disgraced.

The remedy upon which the *Times* insist for painters will, it is true, be available here for the photographic portraitist. It is asked, how can the enactment of the statute affect the question when the ownership can be settled by agreement? The artist feels it will materially affect the question, and the portraitist will feel the same. If the question of ownership in the right of reproduction have to be raised, difficulties will occur which might be avoided. If the law give the copyright to the purchaser, he will often be disposed to show a degree of concern and tenacity as to retaining it, which he would not have felt if the law had not conferred it upon him. A thing once in possession often acquires a degree of importance in its possessor's eyes it does not possess in the abstract. The purchaser of a painting often buys the picture for the pleasure its possession will afford him, and never dreams of copyright; but if by the provision of the law copyright passes to him by the act of purchase, he will be ready to feel aggrieved if he is asked to sign an agreement by which the copyright remains in the hands of the painter. So in like manner with the smaller matter of the photographic portrait. As a rule, no thought of copyright enters the mind of the sitter: but it will acquire a sudden value in his eyes if explained to him, and he is asked by agreement to forgo it.

But it will be contended, not unnaturally, that it would be obviously unfair to leave in the hands of the portraitist the right to multiply and publish portraits of his sitters without their permission. Clearly so: and a provision limiting their right to use a portrait for any purpose without the permission of the sitter might with great propriety be inserted in the Act. Indeed, such a clause protecting the public, and furnishing a simple remedy, might be very desirable as deciding a question which has occasionally arisen as to the exhibition of portraits in defiance of the expressed wish of the sitter. But that the copyright shall as a matter of course pass to the sitter, or person ordering the portrait, appears to us to be at once unfair, inconvenient, and useless, injurious to the portraitist, and of no value or advantage to the public.

There is one specific advantage given to artists in the proposed amendment which is worth note. The Royal Commissioners propose that copyright in literature and art shall be extended, and be enjoyed during life, and for thirty years after death.

LIGHTNING PROCESSES.

OUR readers are probably aware that in America photographers or their organs get very much in earnest, and base furious wars on difference of opinion as to the excellence of a process. An amusing little episode arises in relation to what is termed the "Lightning process," in which our Philadelphia contemporary, an opponent of the "lightning process," gives unconscious testimony as to its excellence. Mr. Notman, of Montreal, has been recently

advertised as one of the converts to "lightning," and our Philadelphia contemporary explains this by suggesting that the Mr. Notman, Mr. William Notman, does not dabble with chemicals himself, but gets his people what they like. And amongst his people is one of his brothers, John, who is fond of novel experiments, and was once a discoverer of a rapid process himself. The writer quotes, in illustration of this, a communication to *Snelling's Photographic and Fine Art Journal* of twenty years ago. A glance at the formula is very interesting. It is just about twenty years ago, as old photographers will remember, that a war waged fiercely as to the use of iron development for negatives in place of the old pyro system. Pyro was dethroned and iron reigned, an enormous reduction in exposure being gained by the change. Mr. Notman was one of those who early and definitely adopted the new and improved method. Instead of suggesting, therefore, that Mr. John Notman is easily led away by novelties, the natural conclusion is that he is quick to recognize improvements, and that if the lightning process of to-day be as great an improvement as was iron development twenty years ago, it is well worthy of consideration. We do not enter into the controversy, but would like to hope that the claimed rapidity is found a reality by those who test it. It is amazing to remember the bitter tenacity with which old pyro was retained and defended as the best developer twenty years ago.

EXTENSIVE AND SUCCESSFUL PHOTOGRAPHIC ENTERPRISE.

We find in one of the metropolitan district papers, the *South London Chronicle*, an interesting sketch of successful photographic enterprise, narrating something of the career of Messrs. A. and G. Taylor, of Forest Hill, Queen Victoria Street, and we know not how many more places. We are told, by the local journal in question, that "the career of the gentlemen merits a chapter in a future edition of 'The Romance of Trade,' and is another illustration of the truth that intelligent perseverance and clear-sighted enterprise will always command their reward. Established in comparative obscurity, a few years ago, when its whole staff could be enumerated on the fingers of one hand, this firm at the present time claims, and claims justly, to be the largest photographers in the world. By untiring industry, strict integrity, and great skill in their profession, Messrs. Taylor have won for themselves this proud position. With their headquarters in London, they have established branches in all the great centres of commerce in the United Kingdom. On the Thames, the Mersey, the Clyde, and the Liffey, they are equally well-known. They have a studio in the most fashionable of the Paris Boulevards, and now, having conquered the Old Continent, they have sent out an expedition to win the New. In the course of the next few weeks, studios will be established in New York, Boston, Philadelphia and Chicago."

It will interest many photographers to learn that the managing partner to the firm, who has gone out to conduct this American enterprise, is Mr. J. Traill Taylor, late editor of the "British Journal of Photography," and the following interesting particulars of his recent departure are given. Our local contemporary says:—

"We may mention, in passing, that this gentleman was entertained at a farewell dinner just previous to his leaving England, and presented with a testimonial valued at 200 guineas. He is possessed of great literary ability, and contributions from his pen have occasionally appeared in the *Journal of the Society of Arts*. We have no doubt he will bring to bear upon his new duties that energy and force of character for which he is so distinguished. Saturday, the 11th of January, was the date fixed for the departure of the good ship *California*, of the Anchor Line, and the Victoria Docks the scene thereof, and many

were the preparations for the memorable event. In addition to the gentleman above mentioned, the emigrating party consisted of fourteen operators and men skilled in the enlarging process, besides colourists, for all of whom first-class berths had been provided. As the hour approached for the departure of the vessel, the last adieux were exchanged with the immediate relatives, and the deck left to the members of the firm, who had come to see their comrades off, among them being Mr. George Taylor, their respected principal. A rather amusing incident occurred just at this juncture. As the friends were about leaving, the vessel moved from the dock sooner than was expected, and prevented the possibility of landing, and there was no help for it but for the visitors to accompany the vessel to Gravesend, and there reach terra firma. We cannot speak too highly of the admirable arrangements made on board for the comfort of the passengers, or the generous hospitality shown to those friends who accompanied them down the river. Luncheon was served in first-class style, and previous to parting the whole party joined hands and expressed their feelings in singing 'Auld Lang Syne.' The last farewell was exchanged, the last shake of the hand given, and as the tug moved off to the shore, the air resounded with cheers for the success of the American business, which were answered from the dock with cheers for Mr. George Taylor. We wish the project success, and the *California* a pleasant voyage.

We are further informed that "it is the intention of Messrs. A. and G. Taylor to establish, in addition to the studios above-named, a factory or depot on a very extensive scale, fitted up with every appliance that ingenuity can devise, for the production of their noted enlargements, and for the efficient working of the various mechanical processes in connection with photography. From this great central dépôt at Brooklyn will be issued those charming Excelsior portraits which, in the old country, are scattered broadcast, giving universal satisfaction, and which in the New World will carry on their mission, enabling the smart speculator of Wall Street, the not less smart New Englander, the rail splitter of the Western States, and for aught we know the 'tearless Stoick of the Woods' in his native wigwam, to secure the shadows of their friends ere the substances fade. The sending out of this photographic expedition is extremely novel in its character and original in its conception, nothing of the kind having been before attempted in the history of photography."

AN EARLY ARTISTIC PORTRAITIST.

A CORRESPONDENT of the *St. Louis Practical Photographer* gives an interesting reminiscence of a visit to M. A. Salomon's studio in 1862. After some preliminary remarks, he says:—

"At that time No. 58, Rue Laroche Foucauld, was the address of the man who had among his negatives the greatest personages of the day, and almost from every part of the globe. Let it not be supposed it was a useless precaution to have ascertained the exact number, because the street I have named is not a big or a fashionable one on some boulevard: it is narrow, unimportant, very quiet, just the sort of spot a man of moderate means, who loves study and peace, would select for his abode. On the small green door of a private house there was only to be seen "No. 58," not even a brass plate with name. The front portion of the establishment, including the door, was composed of a double sort of work-place; the first or ground floor was a sculptor's atelier, and above this a glass house had been arranged by knocking down some brick work. A small garden intervened between this and the dwelling house. There was nothing to be seen here of the present day arrangements, got up at immense outlay, and still greater cost of rent and taxes. This very modest and even mean-looking house, with its double work-shop, was

nevertheless the residence and place of labour of a true and great artist; one who has honoured photography doubly, in so much that he, being a clever sculptor, has abandoned the chisel for the camera, to become a still cleverer photographer. I must confess that my first impression was one of some disappointment, but it was soon dispelled by a very courteous reception. At a guess, Salomon was a man probably a little over forty, of the middle height, and it was very evident fully absorbed in the concerns of his work; so much so, indeed, that his good wife had to hunt him up and use her utmost powers of persuasion to make him partake of sufficient food to avert collapse. He would go a whole day without nourishment, she said, if she were not always after him. A great enthusiast, a hard worker, and a jolly good fellow for all that.

"Notwithstanding the prevailing fashion, a great demand for small photographs, it may be surprising to learn that Salomon never took one. He had but one size, one style, one price—the 8 by 10 size plate, half-figure, nearly always standing, plain background, and at \$20 first copy.

"No sitter was ever allowed to get out of his hands under anything less than two hours, and in that time from six to eight negatives were generally made.

"It is probably needless to do more than observe, cursorily, what an amount of study and care each sitter was made the object of. But he knew full well what he was doing, and it remained a question with me, from all I heard him say, whether he ever considered he had done his work well enough to satisfy himself. No one could print his portraits to his satisfaction. He observed: 'Those I am very anxious about I must do myself.'

"It may be asked how it came to pass that this photographer could resist the universal current (refuse to do the work in demand), and otherwise go counter to every established system of business? For all that, he had as much work to do as he could conveniently get through, in his own style and at his own price, and we may remain satisfied with the explanation that his superior talent did it. It is very evident that Adam-Salomon's true artistic method of leisurely proceeding had the desired effect, as evidenced by the very superior portraits he produced. His superiority asserted itself without any artificial aid, and brought to his door the greatest people it has ever been the good fortune of any photographer to greet within his walls.

"In point of business results, it will not be doubted that the results were just as satisfactory, when it is remembered that his daily average receipts amounted to \$200. All this work was done by himself with three assistants.

"I have said that the utmost simplicity met the eye everywhere in point of outward show; but it will be still more surprising to learn that there was not one photograph framed and hung upon the walls—no reception room. In his own sitting room there could be seen on the table two or three albums, large size and of the old style, of which the leaves were covered with prints, carelessly pasted, unfinished, untouched, unburnished, unanything, in fact; complete bareness, as much as to say, 'I am here, and that is sufficient.' Indeed it was quite enough, and no more seemed to be expected by his illustrious patrons, who, while admiring the great talent of the artist, could overlook his peculiarities and be fully satisfied with having seen some friend's portrait. I was naturally inquisitive as to the ways and means of arriving at such perfection, and my questions were of the usual kind: Who is the maker of your lens (he had only one, a four-inch)? He answered me with a benignant smile and a slight shrug of his shoulders. 'Lenses are like fiddles, my dear sir; it is not the instrument that matters much, but he who plays upon it that makes all the difference.' He was good enough to show me some of his negatives, which, from the

bluish-black lines of them, seemed as if developed for the second time with bichloride of mercury; they were rather thin, but very uniform and clear. His 'retoucher' was an artist and an engraver by profession, and he had acquired an admirable and intelligent proficiency in the method of improving and finishing the negative without spoiling it.

"It is not always within the power of every one of us to achieve eminence or many of our cherished dreams, but it is within the sphere of all to strive and to show that we take to heart the paternal advice of our Editor—aim high

VENTILATING DARK-ROOMS.

BY JAMES CHINN.

I HAVE noticed from time to time the various plans adopted for allowing the operator to inhale fresh air while at work. The plan I am about to describe is simple and inexpensive, and doubtless practicable in most studios.

In the first place, cut a hole in the wall (opposite the door, if possible) any convenient size, get two long strips of wood one inch square, and two others two inches by one inch; nail one of the flat pieces to one square piece, so as to form an angle or rabbet, nail this to the wall about two inches above the hole already cut, nail the other two together and then to the wall below the hole. Be very careful to have them parallel, or you will spoil the job. Make a piece of flat wood, a little longer than the hole, and wide enough to run easy in the two pieces nailed to the wall; put a few small staples in the wall around the room, and one each end of the shutter, and inside the top corner of the door; then take a strong string, or small copper wire, shut the door, make fast one end to a staple in the shutter, pass it through the staples in the wall, and fasten to the door, then through the staples along the other side of the wall; and finally, fasten the other to the other end of the shutter, open the dark-room door, and you will feel the benefit of the hole in the wall.

If you line the shutter and slides with a piece of cloth, there will be no danger of actinic light entering.

This may seem a lot of trouble, but if your dark-room be made of wood (which, luckily, most of ours are, in the Colonies) and you have any mechanical skill, it will not take more than an hour.

Blenheim, N.Z.

NORTHERN NOTES.

BY JO VESTRIS.

Hot Water Heating, versus Hot Air Heating.—At the last meeting of the West Riding of Yorkshire Society the President settled the question of heating the studio rather summarily, and yet with an air of reason quite satisfactory to the members.

The question as to the cause of moisture on the inside glass of a studio was answered by Mr. Haworth in rather an ambiguous manner. "In warming a studio with hot water, the air is charged with moisture, which is condensed, evaporated, and recondensed, and thus the room remains constantly wet." I should like to ask Mr. Haworth how he can get moisture from a hot-water pipe other than by boring a hole in the pipe and allowing the water to evaporate in the shape of steam?

"If the room were heated by hot air," says Mr. Haworth, "the constant influx of hot air forced out the same quantity from the room, which carried away the moisture with it." Now I say hot air cannot force out damp air any sooner than a cast metal pipe heated by water can. If free ventilation does not exist, condensation will take place by any heating system. The system of hot water heating by circulation is certainly by far the simplest, safest, and best when properly applied; and now that carbon has become a staple branch of the art science, this is the only system by which a regular supply of hot water can be had without in any way dis-

arranging the heating system. It is less liable to cause condensation than the hot air system, for the simple reason that hot metal pipes import no moisture into the studio, while hot air is just another name for steam, theoretically called dry air, a thing which is not known to exist in nature, and is very probably not producible in art.

Artificial Light.—I have been thinking over the many disadvantages (or negative advantages, if you will allow me) of the newly-brushed-up night-light craze, when I read in the daily paper that "pictures produced by artificial light are superior in many respects to those taken in the middle of summer," with the further advantage that "ladies and gentlemen can be photographed on their way to or from the theatre or ball-room. Isn't this too awful, that photographers can condescend to wait about the streets during the witching hours of night with their artificial light box and cyclopean eye, that ladies and gentlemen may be photographed "on the way to or from the ball-room or theatre," and further "sittings will be taken any hour of the day or night"? Now, artificial light is very good in certain circumstances, but the photographer who advertises in the above style—and it is a fact—must be aware that he is grossly perverting the truth in the first part, and sorrowfully degrading the profession in the second. The man who uses artificial light so largely should be relegated to the companionship of undertakers and firemen, who have a night bell attached to their doors, and who always go to bed in their boots.

At the next Photographic Exhibition we will be having these "artificial" artists coming out after Whistler, in "Arrangements" in three shades of grey, "Nocturnes" in pink and spangle with footlights, and "Symphonies" in dark-room and dormitory.

ARTISTIC PHOTOGRAPHY.

On many of the boulevards, and on all the chief streets in Paris, are found pretty shops where they sell nothing but photographic pictures.

During the Exposition an unusual display is being made. Everybody finds pleasure in examining the attractive exhibits found in these shop windows. Throngs are about them all the afternoons and during the evenings; as they light up brilliantly, real crowds. Such artistic pictures of actresses! Such clear and sharp pictures of the wonderful buildings in the public squares, and such views of the Exposition! Just out of the Rue De l'Opera, in the Boulevard Des Italiens, is one of these picture stores. We often looked in the windows, and one day saw, O, such a face! 'Twas that of a Madonna. Everybody looked at it, spoke about it. The dearest cabinet photograph sold in Europe is that of Queen Victoria, taken by Bergamaseo; price, 75 cents, everywhere the same. The price of this Madonna was 90 cents. It seemed like a familiar face, a photograph which we had seen in New York; but it was on a card with the name and address of this Paris establishment. Several Americans had been heard to exclaim, as in the crowd we looked and admired together, "Oh! that's a picture." "Oh, what a photograph that is!" "Ah! if our American photographers could only take such pictures!" "Did you ever see anything anywhere so fine?" One day, after hearing these expressions for the hundredth time, making up our minds to "see" about that, we went in to the shop and said, "Now be frank about that photograph; is it not made in the United States?" The Frenchman answered, "Oh, Monsieur, he is such a beautiful picture! Ze artists he raves, Oh, ze beautiful Madon!" "But isn't it made in the United States? And didn't you get it through Anthony's?" And isn't it one of Sarony's?" "Let me assure you, Monsieur, it is ze finest photograph in ze world!" And then the fellow went into a dozen exclamations as to the perfection of the artistic effect, the light, the shade. It took a long time, but to persistent questioning at last he said, "We, we, Monsieur; he is Sarony; he is Anthony!"

To get "good photograph," however, you must go to Paris; and "if American artists could only take such pictures," it would be so much more to our credit?

The face was that of Maud Branscombe, and the photographer was Sarony, of Union Square.

Look out for pictures taken over unmounted or stripped from the home card and remounted again. Beware of artistic photography in Paris.

[The above is signed by S. C. P., in *Anthony's Bulletin*. There are, we fear, tricksters of the kind descended all over the world. But does not S. C. P. indulge a little in "spread-eagleism?" Sarony can scarcely be called an American photographer, and Maud Branscombe is an English girl. The United States abound in pretty girls and capable photographers, so that no mistake is necessary to vindicate American claim to art and skill. And did the Frenchman really indulge in stage broken English?—Ed.]

Correspondence.

MUFFINS AND PHOTOGRAPHY.

SIR,—Would you kindly insert the following in reply to the Ramsgate paragraph intitled, "Hard Times," in your issue of the 21st of January? I beg to state that your correspondent has made a great mistake respecting the donkey and photographer's barrow which he met in St. Lawrence the Sunday previous. He states that, to his great surprise, he read, in yellow letters, "H. Griggs, Photographer, Wholesaler and Retail Muffin and Crumpet Manufacturer." I beg to state that there is no such word as "photographer" on the barrow, nor the word "manufacturer," but in large capital letters the words, "James Griggs, Muffins and Crumpets, Wholesale and Retail, Ramsgate." The colour, instead of being yellow, is black and red. His eyes must be getting bad indeed not to take a better focus of the photo. barrow, both respecting colour and words. I have a vacancy in my establishment, and I think it would greatly improve our worthy friend's sight if he was to accept of it for the remainder of the season, providing he brings his own donkey and barrow, and sells substance for the winter; and may his shadow never be less!—I am, sir, yours respectfully,

JAMES GRIGGS,

Photographer, and Muffin and Crumpet Baker.

4, Albert Road, Ramsgate.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE monthly meeting of this Association was held on Thursday evening, the 30th ult., at the Free Library, William Brown Street, Mr. H. A. WHARMBY, the retiring President, in the chair.

The minutes of the annual meeting were read and confirmed. Mr. H. G. Wood was elected a member of the Association.

Mr. THOMAS CLARKE, the new President, then took the chair, and, after thanking the members for appointing him their President, read his address (in our next).

THE PRESIDENT exhibited some prints printed by electric light, which had all the appearance of sun-printed pictures, and a print from an instantaneous dry plate collodio-bromide, taken by Mr. Sayce in 1863. Some transparencies were also shown on collodio-bromide plates, which had been prepared five years previously, and had since been carried in a deal grooved box about 9,500 miles without showing any signs of deterioration.

Mr. O. R. GREEN exhibited some panoramic views of Athens, an enlargement, and a large number of prints which he had taken during his travels, all from collodio-bromide plates.

Mr. GREEN, in reply to a question whether he had had many failures, said that the few he had were chiefly owing to the bad glass used, and not to the preparation of the plates. He (Mr. Green) also exhibited some prints toned about twenty-one years ago with gold and platinum. These had not faded at all, and he thought the whites were purer than the prints of the present day.

The Rev. H. J. PALMER then read a paper on "Portraiture by Artificial Light for Amateurs" (in our next), and afterwards exhibited his simple apparatus by giving a practical demonstration of his method of artificial lighting by taking a portrait of the President on one of Swan's dry plates.

A hearty vote of thanks was passed to Mr. Palmer, and the meeting was then adjourned until the 27th instant.

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

THE above Association held its annual meeting on Wednesday, 29th January, at 160A, Aldersgate Street, E.C. The chair was taken by W. S. BIRD, Esq.

The business of the evening was commenced by reading the minutes of the previous meeting, which were confirmed.

The Secretary's report was then read to the meeting as follows:—

Secretary's Report.

"In presenting my statement for the past year, I have the pleasure of reporting an improvement in the condition of the Association.

"The receipts for the year are £39 7s. 6d. as against £35 13s. 4d. of the preceding year, and the actual working expenses £22 15s. 1d. as against £26 9s. 2d. Therefore, in consequence of the increase of receipts and decrease in expenditure, the funds of the Association have been raised from £17 3s. 10d. to £57 16s. 3d.

"This result I submit is satisfactory, and should the Association receive that support which it deserves from photographers, the funds would soon be multiplied, and thereby the operations of the Association could be considerably extended."

Board of Management Report.

"The board of management offers its sincere and hearty thanks to those gentlemen who have so kindly, by their donations and otherwise, assisted the Association during the past year, and it hopes that with a continuance of this assistance the designs of the Association may be still further promoted.

"Although, perhaps, from a pecuniary point of view, the Association is as yet not in quite so flourishing a condition as might be desired, yet, looking at its career from its commencement up to the present time, it has probably never been in so healthy a condition generally as now.

"Its pecuniary state, too, though it might certainly be better, is improving. A glance at the Secretary's report will show that during the last year the receipts have increased slightly, while the expenses have been lessened.

"All that is now required to make the Photographers' Benevolent Association an active and flourishing institution is the thorough support of photographers generally throughout the kingdom, and the Board has permission to publish the two following letters selected from similar correspondence in support of this view.

"71, Terminus Road, Eastbourne.

"SIR,—Here with please find cheque for one guinea for your funds, and we are very sorry to see so small a balance to your credit. If every English photographer sent you just the value of one dozen of their C.D.V. pictures, it would greatly increase the total of an institution that, we think, is very much needed, and little thought of by many masters.—Yours truly,

"G. AND R. LAVIS."

"19, Bloomsbury Street, W.C.

"DEAR SIR,—In reply to your application I send you enclosed another donation of £3 3s. I do hope the Association will be self-supporting in another year. Efforts should be made to secure a greater number of members. Surely the journals will help you in this! A few lines on the advantages of your Association oft repeated would, I should think, bring about the desired result. I can but repeat my hearty good wishes for the prosperity of the Photographers' Benevolent Association, and remain yours faithfully,

"J. H. DALLMEYER."

"The advantages of such an institution are widely felt, and this Association has already been the medium through which a considerable amount of distress has been relieved, and a large number of photographers assisted in various ways. If masters and men would come forward heartily, and assist the Association in its charitable purpose, its usefulness might be very considerably augmented.

"The Association not only relieves members when in distress,

but also affords them all possible assistance in obtaining situations when out of employment.

"Subscriptions are as follows:—Ordinary membership, yearly, 10s. 6d.; half-yearly, 5s. 6d.; quarterly, 3s. Honorary subscriptions, one guinea per annum.

"At the close of the year a soiree was held at the Exhibition, Pall Mall, the Photographic Society of Great Britain having kindly given the use of their Room, and the receipts being devoted to the funds of the Association. The attendance was good, and the evening went off very successfully. The President and Secretary of the Society were both present.

"The Society also desires to record its sense of the courtesy and consideration of the photographic journals in giving its proceedings a desirable publicity.

"In conclusion, the Board of Management would point out the necessity of the active support of all members if the ultimate success of the Association is to be secured. Every effort to further the aims of the Association, and to make known its existence and intentions, may certainly be considered work in a good cause.

"W. S. BIRD, Chairman."

The two reports were adopted by the general meeting.

The election of officers then took place. Messrs. Moore and Platt were elected as ordinary members of the Association.

A letter from Rev. F. F. Statham was read to the meeting, stating his inability to be present through ill-health. The Secretary was instructed to express the regret of the General Meeting to hear of his illness.

The business having been brought to a termination, Mr. Bolas proposed, and Mr. Ashman seconded: "That this meeting present a vote of thanks to the Chairman for his very able services during the year." This was carried unanimously, and the meeting dissolved.

The next committee meeting will be held at 8 p.m., on Wednesday, March 5th.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY. The Association met on the 20th December, 1878, Prof. H. VOGEL in the chair.

After the admission of a new member, Herr RELVAS, of Collega, near Lisbon, a member of the society exhibited some portraits from nature in collotype, which were pronounced by all present to be remarkably successful specimens of the process, showing unusual intensity and depth.

Dr. FRIEDLANDER proposed that all patent specifications relating to photography should be acquired for the use of the Association, and it was determined to purchase those which had special interest for the members.

A letter was read from Messrs. FREY & Co., of Aarau, Switzerland, declaring that the so-styled rapid process which Herr Schwartz had lately offered for sale to the members of the Association was merely an old method described and published in the year 1861, by a photographer of Munich. As a proof, they instanced the case of one of their own customers, who in that year had bought precisely the same formula and directions for eighteen florins, and on his remonstrating with Herr Schwartz, had received the price of his second purchase, fifty marks, returned to him, with the excuse that the latter had been co-inventor of the Munich process.

Herr MAROWSKY made some remarks on chrysoidin varnish, whose yellow colour he maintained to be very unstable. According to his own experience, it had considerably faded after being in use for a couple of days.

Herr SCHAAERWACHTER had made the same observation, and was of opinion that this varnish, of which so high expectations had been formed, would be found to be valueless for photographic purposes.

Dr. VOGEL read a report of the Polytechnic Society on the patent polychromic autographic process of Herr Holtzmann, of Spoyer. It was claimed for this process that by means of it from twenty to thirty good copies of a many-coloured drawing or water colour could be produced by mere contact, without the use of any press; it was also expected that the process would supersede every kind of tracing or reprinting process, and would make the ordinary mercantile copying book quite unnecessary. Without accepting all supposed superiority, the chairman acknowledged that the invention had some merit, and was in a position to demonstrate the method to the meeting. The original drawing, which may be either in outline or mass, must first be prepared on tracing paper with special (aniline) colours. A piece of paper—called by the inventor negative paper—is

coated with a gumlike substance, floated for a couple of minutes on water, and then blotted on filtering paper. By this means the surface of the paper has become sticky; the original is laid on it, made to adhere by pressing with a handkerchief, and then drawn off again. On the negative paper is now produced a copy of the original in the same colours, only the copy appears to be much more brilliant and intense than the original. This copy, called by the inventor, not quite correctly, a negative, serves as a printing plate. Pieces of ordinary paper are damped and laid on the negative, and when removed have imprinted on them an accurate copy of the original. The first copy taken in this way at the meeting showed all the colours equal in intensity to those of the original; in the second they were decidedly fainter; and in the third some of them quite failed to appear. Prof. Vogel expressed a decided opinion that it would be impossible to take anything like the number of good copies by this process as are claimed by the inventor. He showed the copy of a letter which he had written in different colours on ordinary instead of tracing-paper; of these, only two, violet and dark green, came out well, the majority failing to copy at all. The meeting came to the conclusion that the method, though highly interesting, was hardly likely to become of practical importance.

The next meeting was held on the 3rd of January, 1879, when Dr. VOGEL again occupied the chair.

A letter was read from Herr Reutlinger on the fading of carbon prints. He had carried out a variety of experiments with a large number of samples of tissue, in which he had carefully attended to all the precautions suggested by his own experience as well as by the instructions of others, so as to overcome all technical difficulties of the process. But in the durability of the prints thus obtained he had been bitterly disappointed. During the late exhibition he prepared some carbon prints with the greatest care on tissue obtained from the well-known house of Braun and Co., and exhibited them in the same case with a number of silver prints. After being thus exposed during the whole period of the Exhibition—from six to eight months—the difference in the condition of the silver and carbon prints was most marked. The latter, when first exhibited, had a rich brown tone, but when they returned to the studio they had a dirty yellow tint shot with green, and had lost much of their original intensity; spots that had been retouched had become painfully manifest. During all this time the silver prints that had been exposed under exactly the same circumstances had remained unchanged. Herr Reutlinger believes the cause of the change of colour to be due to chemicals contained in the colouring material of the coating, or in the paper. His opinion is that the old silver process, if attention be paid to it, will long continue to bear the palm.

Herr MAROWSKY agreed with Herr Reutlinger in considering silver prints much more durable than those in carbon. He possessed some of the former twenty-five years old, which were now as good as new in point of colour. They had, however, been kept unmounted.

Herr JOOR remarked that unmounted copies were more durable than mounted ones, especially than those mounted on card.

Herrn ROLOFF and REICHARD had had similar experience of the superior durability of unmounted photographs, but the latter gentleman was unwilling to admit that carbon prints are so liable to change colour.

Herr QUIDDE, while acknowledging the correctness of the observations of Messrs. Reutlinger and Marowsky, appealed to the well-known chemical facts, from which it followed that silver prints are much more easily affected than carbon prints, and that the fading, when it had once commenced, went much further in the former than in the latter. On this ground he believed that photographic copies of documents that might preserve their importance for centuries should be taken by a process resting on an imperishable material like carbon.

Professor VOGEL explained that carbon pictures that had been prepared on tissue tinted with Chinese ink or lamp-black would not fade. The cause of the change of colour experienced by Herr Reutlinger was to be found in the use of carmine, which is known to be an impure and evanescent colour. Insufficient washing might also, in consequence of a residuum of chromate, produce a change of tint in carbon pictures. To obviate this, the treatment of the print with sodium hyposulphite to decompose the chromate could be recommended. The speaker had twelve years ago prepared his own tissue, and on the advice of the late Herr Grasshoff had used Vandyke red prepared by Moewe, of

Berlin, instead of carmine. Pictures taken on this tissue had not suffered the slightest change of colour in all that time.

Herr HARTMANN presented to the Association, in the name of Herr van DELDEN, of Breslau, a number of large photographs—mostly of interiors—which met with unanimous approval. Herr Hartmann was unable to describe the objective with which these pictures had been taken, but the evenness of definition and the amount of detail, both of which had excited admiration, he accounted for, the former by the use of diaphragms, the latter by their having undergone long exposure, amounting in some cases to an hour and a-half.

In reply to a question of Herr Reichard, Herr Hartmann explained that Herr van Delden possessed no special process for obtaining such purity and equality of definition with so long an exposure; all that he did was to use a good fresh silver bath, and to line his slide and camera with damp blotting-paper.

Dr. VOGEL pointed out that the measures to be adopted when long exposure is required had often been discussed in the Association. Among these are the addition of glycerine to the silver bath, or, preferably—as the latter might spoil the bath—flowing a solution of silver and glycerine over the plate after it has been silvered; also an after-silvering of the plate in a weak bath. Again, moistening the interior of the camera had been recommended; further preventing evaporation, as far as possible, by placing a piece of plate glass in front of the plate to be exposed, and separated from the latter only by spots of sealing-wax at the corners.

Herr JOOR had also occasionally to expose for an hour and a-half, and had resorted to no other precautions than that of resting the plate with its lower edge on a piece of blotting-paper, and of rubbing the back of the plate perfectly dry.

The CHAIRMAN read a letter from Herr von Schlicht, in which he gave an account of the successful results he had obtained in the dry process with gelatino-bromide emulsions prepared according to Stuart Wortley's instructions. In drawing attention to the extraordinary purity and delicacy of the photographs sent by the writer to accompany his letter, as samples of the work that he had accomplished with this process, Dr. Vogel expressed his gratification that such excellent results had been obtained with gelatine emulsion plates prepared in Germany. He himself had been continuing his experiments with English plates. With new ones just obtained from Swan, he expressed himself as disappointed as regards their sensitiveness, but some lately received from Wratten and Wainwright had given astonishing results; he had been able with the latter to work eight times as quickly as with wet plates.

Herr SELIGMANN, who had also ordered plates from England, had met with an unfortunate accident on their arrival in Germany. When passing the Custom House as glass the officer had insisted on opening the package, and, admitting the light, had spoiled them. By immersing them in a bath of 16 parts potassium bromide, 50 parts nitric acid, and 350 parts water, Herr Seligmann had succeeded in restoring to a certain extent their sensitiveness.

Some negatives executed by Herr PRUMM with Wratten and Wainwright's plates, and taken from the one exhibited, they appeared to give a large amount of detail, but seemed somewhat weak, so that it was astonishing to find such good prints taken with them. In reply to a question, Herr Prumm stated that printing from these negatives took four times as long as for ordinary wet ones; but he had hopes in time to overcome this difficulty. The weak appearance of the negatives, as well as the long time required for printing, he attributed to the exceeding sensitiveness of the plates causing them to veil slightly in the dark-room, though he had employed every precaution.

Herr SELIGMANN gave an account of his experiences with Wilde's plates. With an ordinary wet plate he employed an exposure of two seconds, while to obtain the same effect with one of Wilde's dry plates he required an exposure of thirty seconds, and that, too, when it was developed soon after being exposed. When a similar plate was developed six weeks afterwards, it required an exposure of 120 seconds. Dr. Vogel pointed out that the best way to proceed for photographers who prepare their own plates, and import the gelatine emulsion from England, was to order the gelatine films to be sent to them in a letter; they could then dissolve the latter in water and coat their own plates with the solution.

Dr. VOGEL, to the great pleasure of the members, expressed himself as ready to undertake a course of lectures in chemistry for the benefit of the members of the Association. He had now been able to make time for carrying out this proposal, and hoped to be able to meet the wishes of all concerned.

Talk in the Studio.

THE *Athenæum* says:—"Mr. H. B. Pritchard, the author of 'Dangerfield,' has a new novel in the press, called 'Old Charlton.'"

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The Annual Meeting of this Society will be held on Tuesday evening next, February 11th, at the Gallery, 5A, Pall Mall East, when the election of officers for the ensuing year will take place and other business be transacted. Mr. John Harmer will exhibit and explain a new camera for the studio.

SUNSHINE IN LONDON.—The Astronomer-Royal has just published his report of the amount of sunshine with which we were favoured in the neighbourhood of London during the year 1878, and it must be owned that the result is dispiriting, and almost justifies the criticism of foreigners that we English so seldom see the sun that we hardly know him when he makes his appearance. Things are not quite so bad as this, but it is bad enough to know that, during the year, out of 4,454 hours of possible sunshine, we only had 1,250 hours in the neighbourhood of London, or a very little more than a quarter of the amount which we should have had had the sky been perpetually cloudless. In London it is probable that the sunny hours were considerably shorter than even this record gives us, for it is frequently fine and sunny even at Greenwich when we are enveloped in fog and darkness here. Were we to take the winter months only, it would be seen that the visits of the sun are indeed few and far between. The last week of which we have seen a return gives only one hour and a quarter of sunshine, and we have not had more than one fair day of sunshine during the whole month of January. It is probably not too much to say that in the four winter months, that is from the 1st of November to the end of February, Londoners do not receive one week's sunshine, a minimum which, we reluctantly admit, fairly justifies the sarcasm of foreign visitors at our English climate.—*Standard*.

LIGHT AND LIFE.—The question as to how life is affected by the different colours of the spectrum has at various times engaged attention, and plant life has apparently been more studied in this respect than animal. Two distinct series of researches lately described to the French Academy seem to afford some fresh insight into the matter, and it is interesting to compare them together. One series, by M. Bert, was on plants; the other, by M. Yung, on the eggs of certain animals. M. Bert kept plants within a glass trough enclosure, containing an alcoholic solution of chlorophyll (very frequently renewed) and exposed them thus in a good diffuse light. The solution, which was very weak, and in a very thin layer, intercepted little more than the characteristic region of the red in the spectrum. This excluded part, then, was proved to be the indispensable part of white light, for the plants immediately ceased to grow, and before long died. It is in this red region (as M. Timmizzeff has lately shown) that the greatest reduction of carbonic acid takes place. If red rays are kept from the leaf the plant can no longer increase its weight, it is reduced to consuming reserves previously accumulated, exhausts itself, and dies. This part of the spectrum, however, though necessary, is not sufficient. Behind red glass plants may no doubt live long, but they get excessively elongated and slender, and their leaves become narrow and little-coloured. This is owing to the absence of the blue violet rays. Thus each region of the spectrum contains parts that play an active role in the life of plants. Now turn to animals: M. Yung has experimented during three years on the effect of different spectral colours on the development of the eggs of frogs (the common frog and the edible frog), of trout, and of fresh-water snails. It was found that violet light favoured the development very remarkably; blue light comes next in this respect, and is followed by yellow light and white light (which two gave nearly similar effects). On the other hand, red and green appear to be positively injurious, for it was found impossible to get complete development of the eggs in these colours. Darkness does not prevent development, but, contrary to what some have affirmed, retards it. Tadpoles of the same size, and subjected to the same physical conditions previous to experiment, died more quickly of inanition when deprived of food in violet and blue rays than in the others.—*Times*.

PYROXYLINE AND NITRATE OF AMMONIA.—A remarkable accident happened a few weeks ago at l'Ecole Normale to M. Zédé, who was studying the properties of a composition formed of equal parts of gun-cotton and nitrate of ammonia. This was inflamed in a bronze tube of 6mm. internal diameter, and expanded without detonation. Thirty experiments had been

mado, and M. Zédé then reduced the size of the tube to 5mm. When he tried the experiment anew under these conditions a frightful explosion occurred. The tube was shattered into sixty pieces, some of which passed through the roof of the laboratory and penetrated about 4 ctr. into a brick wall. The operator had one of his legs broken.

To Correspondents.

H. W. A.—It is not customary for photographic publishers to purchase negatives; they prefer to be supplied with the prints of anything worth publishing. But the possibility of the sale of negatives chiefly depends on their excellence and the interest of the subjects. Mr. F. Frith, of Reigate, sometimes purchases negatives of the subjects and quality sent him.

J. SIMPSON.—The mode of enlargement upon which you wish for information is in our view the very worst method you can adopt, and the most difficult to work so as to secure good results. The simplest and best is to make an enlarged negative and print from it. The next best is to produce an enlarged collodion print and transfer it. To produce good direct enlargements you should have a solar camera, and work with direct sunlight. You may produce direct enlargements with a magic lantern and magnesium wire, or a "line light"; but you cannot hope to produce direct enlargements by ordinary day-light. You can purchase iodized paper, with instructions for silvering, of Mr. Solomon, Red Lion Square; or you may prepare paper for yourself, using either *Rive* paper or drawing-paper. This must be salted with a solution containing four grains of chloride sodium and four grains of bromide of ammonium in an ounce of water, and excited with a forty-grain silver solution, exposed wet, and developed with a saturated solution of gallic acid. In response to your request for advice, we again advise you not to attempt an obsolete method, as a better exists.

W. GRIFFITH MEDBY.—The "Carver and Gilder's Guide, and Picture Frame Maker's Companion," published by Kent and Co., Paternoster Row, price half-a-crown.

TAYLOR (Northwich).—We regret that we cannot give you information of any value. We can only repeat and emphasize the advice recently given in our columns, not to send cash and negatives to unknown persons without some satisfactory reference. You cannot do anything with your lens, and you may risk injuring it. A lens of shorter focus will be much quicker, as well as better in every way. It is very difficult to get brilliant images with twenty-four feet between lens and sitter in the kind of atmosphere often prevailing in this country. Such a space of slightly misty atmosphere gives a dull foggy character to the picture.

AMATEUR MECHANIC.—You may stain deal or other light-coloured woods black in various ways. One which will give you least trouble consists in the use of "Stephens' black stain," which can be purchased of most oil and colourmen. Or you may use a solution of sulphate of iron, and follow by a solution of gallic acid. Or boil a quarter of a pound of logwood chips in a quart of water, add a handful of walnut peel, and boil again, remove the chips, and add five ounces of vinegar. 2. You will require a mitring block to cut the corners of moulding sufficiently true to form a good joint in a frame.

G. T.—A strong developer is often useful in cold and dull weather in bringing out an image almost impossible to develop with a weak solution. We should call a 50-grain solution of iron strong. It need not have more than twenty minims of acetic acid.

PERPLEXED.—Another case of imperfect fixation. Remember that a solution of hypo quite strong enough for perfect fixation in summer is useless in winter. But it is of more consequence that the solution should be made warm, that is, to a temperature of 60° Fahr. If a solution of hypo be freshly mixed, it will be found very cold, as the process of solution materially lowers the temperature. In winter, always mix it with warm water. It is wise to maintain the temperature of the dark-room to somewhere not much below 60°, certainly above 50°.

C. J. HALE.—We have indicated to the Publisher certain numbers containing hints on photography and wood engraving, or on producing photo-lithographic transfers which may be transferred to wood instead of stone. Some other numbers of a date long back are out of print. In other cases, incidental information occurs in articles devoted to other subjects. It is somewhat difficult for an amateur to obtain specific information on a particular subject without the general study and reading which is involved in a full knowledge of the art. We shall have pleasure in helping in any special difficulty you meet in your experiments.

ANXIOUS.—The pyro developer is much the best for collodion transfers. You may try twelve grains of sulphate of iron in an ounce of water and twenty minims of acetic acid. This will answer, but not so well as the pyro developer.

HARRY POINTER.—Thanks. But it is better not to re-open the matter, even to mention that amusing fact. Several Correspondents in our next.

The Photographic News, February 14, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE BANK OF FRANCE AND PHOTOGRAPHY—INTENSIFYING FORMULE.—THE COMPARATIVE PERMANENCE OF CARBON AND SILVER PRINTS.

The Bank of France and Photography.—It is said that at the bank of France they have recently instituted a photographic studio in the cashier's department. The studio is in the rear of the desks at which payments are made, and the consequence is that any customer's face is readily seen when he comes up to draw his money. It is not likely that the fact is unknown to those who frequent the bank; but, after all, this is of little importance. It is not the portraits of those who come every day that are wanted, but the stray sheep who occasionally come within the bank doors. The bank clerk, when he is at all suspicious, communicates by signal with the photographer in rear, and to give the latter time to focus and operate, care is taken to delay the model's departure as long as possible. There is little fear of moving, for a customer, when he is intent on a bank-clerk counting money or sorting notes, is not likely to fidget about much. At the same time, a very ready photographer is wanted. His camera would, no doubt, be properly swung so as to be capable of taking the range in a moment; and if he employed a dry rapid gelatine plate, there would not be such necessity for delay. The plate would already be at hand in the dark slide, and a single movement would suffice to replace the focussing screen by the sensitive film. Perhaps, however, the bank has instituted the studio more as a deterrent than a detector of crime. If it gets bruited abroad that there is a photographic detective on duty inside the bank, the fact will have the same effect, probably, as the warning about "spring-guns and man-traps" exerts upon trespassers. We know that the custom of photographing officials and servants in companies and associations is one that acts as a great deterrent from crime, and, no doubt, causes many a wavering spirit to keep on the right path, instead of turning down the wrong one. In Paris, it is said, all policemen are photographed, so that a record of their features may remain with their superiors, in the same way as criminals are, so that the police-picture galleries must be very extensive indeed.

Intensifying Formule.—Sulphide of potassium has recently been advocated in Germany as a body for intensifying negatives, and, no doubt, it may be employed with advantage in this connection. But photographers should use some discretion in the choice of their intensifiers. When a negative is wanted with transparent lines and a ground as "black as your hat," for the purpose of photo-lithography, or other similar method, there can be no doubt that you cannot get too opaque a film. Under these circumstances, the Eder and Toth intensifier, which we have frequently published in these columns, and which consists in the use of nitrate of lead, red prussiate of potash, and ammonium, is one of the most effective. The light—even summer sunshine—fails to penetrate the sooty film produced, while the lines remain quite clear and transparent. Bichloride of mercury and ammonium also give a dense film, though not such a satisfactory one; while the bichloride followed by hyposulphite, and, therefore, without any ammonium, will likewise be found useful when intensification is not to be pushed to extremes. The employment of bichloride of mercury alone is, in fact, exceedingly convenient where washes or surfaces of different gradations are to be reproduced. Sketches, or drawings which have been washed in, and which do not, therefore, present any extremely delicate half-tones, may be reproduced very completely by treatment of the negative with bichloride followed with hypo, whereas subsequent dosing with ammonium would affect the lighter gradations.

The Comparative Permanence of Carbon and Silver Prints.

—The well-known Paris portraitist, Reutlinger, has brought before the German Photographic Society the question of faded photographs. He makes a very singular statement. He tells us that he was represented at the Paris Exhibition both by carbon prints and silver prints. They were shown upon the same screen exhibited side by side. When first exhibited, they were, naturally enough, perfect in their character; but at the close of the gathering there was a marked difference between them. The silver prints were still fresh and full of tone, the carbon impressions showed marked signs of change. The latter, when first exhibited, we are assured, "had a rich brown tone, but when they returned to the studio they had a dirty yellow tint shot with green, and had lost much of their original intensity; spots that had been retouched became painfully manifest." The silver prints, on the other hand, we are informed, remained exactly as they were at first. After M. Reutlinger's communication had been read, M. Marowsky told the meeting that he agreed with that gentleman in considering silver prints much more durable than those in carbon. He possessed some of the former, twenty-five years old, which were at the present day as good as new in point of colour. We are glad to see that afterwards a good deal was said on the other side, and Dr. Vogel, the President, very firmly assured the meeting that tissue properly prepared with Indian ink or lamp-black could not fade. The change of colour was to be found in the carmine, he said; and one would have thought that most photographers who had anything to do with carbon printing were fully aware of the fact. It is a very singular thing if M. Reutlinger finds carbon prints fading beside silver prints which do not, but it is nothing more. There are pigments which fade, and pigments which do not fade, and according as you use one or other in your tissue, so will this retain its colour. There is nothing more to be said on the subject. That silver prints produced five-and-twenty years ago are said to be seen as fresh and full of tone as when first prepared is likewise no novelty. Many of us have albums at home that demonstrate beyond a doubt that silver impressions can be secured of a durable character; but the fact proves nothing. We know that a film of silver is a very delicate thing, nevertheless, and that sulphur and albumen in combination with it are bad things to have in a picture. If to-morrow we could produce by pigment printing pictures as bright and beautiful, as likewise as readily and inexpensively, as by the silver process, we make bold to say that there would be little silver printing done. M. Reutlinger complains that the tissue upon which his prints were produced emanated from the well-known firm of Brann, of Dornach, and that the pictures, blooming enough at first, lost their colour after eight months' exposure to light. Not only this, but they appeared of "a dirty yellow tint, shot with green." How this could have happened, even with a fugitive pigment, is more than we could understand; but M. Reutlinger believes the change to have been due to "chemicals contained in the colouring material of the coating or in the paper." Doubtless the transfer paper turned yellow, as we know it will, and the bloom of the carmine faded, but still the green markings are incomprehensible. The retouching marks which became apparent would not have been visible if the precaution had been taken to retouch with some of the pigment mixture scraped from the tissue. But that some tissue supplied by Messrs. Brann and Company has faded, while some excellent silver work of M. Reutlinger did not—we say excellent, advisedly, since a Paris sun, shining for eight months, would be a crucial test—is no proof whatever of the durability of one class of printing, and the evanescence of the other. If photographers have by them silver prints which have not faded, they have plenty which have done so. It was remarked at the same meeting that unmounted silver prints were found to keep much better than mounted ones, and of this there can be little doubt.

since most cardboard is bleached with hyposulphite of soda, and contains a trace of that salt. Photographers should not forget this.

FINE ART COPYRIGHT.

THE *Daily News* gossips about the subject of copyright in works of fine art, without, however, expressing any definite opinions on the subject, except, perhaps, in so far as it is more fair to photography than is the press usually when such subjects are discussed. Here is the leader:—

The case of Ridley v. Tuck, which we reported yesterday, is not only interesting in itself, but happens to coincide with the agitation of the questions of property in works of art, and of the relations of different arts to each other. Photography, as Mr. Samuel Fry, who wrote to us a day or two ago, complained, has never been regarded with much affection by proficient in the higher branches of art. It has rendered immense services wherever accuracy for purposes of historic or scientific research is concerned. In its higher developments it has real artistic worth. It has made portraiture more faithful, and less flatteringly idealistic. The rather vague alarms which were formed, or at least announced, at the time of its invention, have not been verified by the result. The camera has not deprived artists of their livelihood, or turned the Royal Academy into the streets; it has not even, to judge from the appearance of the walls of Burlington House every May, interfered at all seriously with the business of the portrait painter. But while it has merits not always allowed to it, and has not the demerits which were sometimes laid to its charge, it has contributed to a branch of art which may, perhaps, be safely described as not the highest variety. Photography constantly helps to fill in the details of certain large and complicated works of art, reproductions of which appear to command a considerable sale. Everybody has noticed in the shop windows engravings and photographs of congresses, councils, and other collections of distinguished or undistinguished persons. The faithfulness of the likenesses in these cases is generally guaranteed, and yet a short reflection is sufficient to show that the gifted artist of the original painting can hardly have taken the trouble, or indeed have had the opportunity, to take the individual portraits in the ordinary way.

The case to which we have alluded will explain the mystery to those to whom it is still mysterious. Mr. Ridley is an artist, and has won his spurs, in the peculiar combination of arts which produces these pictures, by a group of the Royal Family. It occurred either to Mr. McLean, the well-known printseller in the Haymarket, or to Mr. Tuck, a photographer of some note, that a wider if not a higher flight might be taken, and that the Pan-Anglican Synod, with some eighty Bishops, might be "grouped." Mr. Ridley undertook the commission, and the little disagreements which thereupon occurred do not now concern us so much as the method of execution. Royal Families and Pan-Anglican Synods are, it appears, done with a facility which would surprise Rembrandt or Michael Angelo. As Mr. Justice Hawkins well described the process, "You draw a lot of bodies of different sizes, and then stick the heads on." The painter draws the bodies by guesswork, and photography afterwards supplies him with the heads. Three heads it seems are allowed for the size of the body, by which we must probably understand the episcopal trunk or portion covered by the apron, as distinguished from the limbs or portion covered by gaiters. When the eighty headless Bishops were properly grouped, eighty cartes-de-visite would, it may be presumed, be produced, and Mr. Ridley would proceed to sort his heads to his bodies as best might be. It must require a considerable knowledge of what used to be called political arithmetic to assort the bodies of eighty Bishops "sizeably" to their yet unascertained heads, and perhaps Mr. McLean's reluctance to complete his bargain arose from this cause. But the plan of composition—a word never more suitable than in this case—if it does no more, shows us how very difficult the question of so-called artistic copyright is. Suppose Mr. Ridley's picture to have been finished and the divorce (justified by the examples of Saint Patrick and Saint Denis) between the clerical heads and bodies to have been happily terminated, where could the copyright of such a picture reasonably reside? Certainly not in the heads, which, notwithstanding, must be regarded, at least from the public point of view, as not the least interesting part of the performance. Scarcely in the bodies, which, apart from the heads

would hardly be recognisable, and might be made to do duty for any other gathering which happened to include eighty members. Not many years ago there used to be a custom, by no means to be honoured, which on one occasion gave Thackeray annoyance enough to make him notice it in a "Roundabout." A gorilla, or some other unpleasant beast, was depicted, and for the countenance the photograph of some noted person was substituted. This method of caricature, which had for a time considerable vogue, appears to be closely german to the approved modern method of representing Pan-Anglican Synods, Royal Families, and such-like groups.

The correspondent to whose letter we have referred brings forward a claim on the part of photographers to copyright in all "artistic" portraits. The word is of course vague, but there really seems to be nearly as much ground for Mr. Fry's contention as for the claim of painters to reserve in all cases the right of reproducing, no matter by what means and however mechanically, the work of their hands. Mr. Fry, in effect, says:—I group my sitter, and expend my ideas in grouping him, and in taking and developing his portrait, and I don't sell him the right of reproducing those ideas." Something not at all dissimilar was said the other day at the Grosvenor Gallery. It is possible in both cases to see a certain amount of reason in the claim, but the weight of argument seems to be more against it in the painter's case than in the photographer's. For what the purchaser pays for in the case of a painting is undoubtedly the "handwork" of the artist—work which is not to be reproduced by any process which gives the least temptation to the pirate. A photograph may tell the story of a picture, but it can do little more; even the best engraving or an etching has rather other merits than the same. But there is no doubt that a photograph can be made with a little mechanical skill to resemble a photograph pretty nearly in the traditional relation of the two peas. The imitator thus picks the originator's brains, in exactly the same manner as the pirate of printed matter, reproducing his work and robbing him of his profits without any fresh expenditure of intellectual force. The same may perhaps be said of Mr. Ridley's *disiecta membra*, or at least *corpora*, of Bishops and other dignitaries. If such things can be multiplied indefinitely, as they certainly can be, a strict copyright law is almost the only chance their ingenious inventors have of deriving profit from them. The question between the photographer and the public is only one of the many puzzling questions to which the general question of copyright gives birth, and which become more and more puzzling as methods of mechanical reproduction are multiplied, improved, and cheapened. On the one hand, the public naturally desires to have its Bishops, headless or not, as cheap as may be; on the other, the artist or the dealer is equally naturally anxious for his profit. The case which is hardest for the photographer is undoubtedly the publication for profit of photographs originally taken, or understood by the artist to be taken, for the mere private use and enjoyment of the sitter. In such a case he receives, indeed, all that he covenants to receive, but finds himself unwillingly furnishing somebody else with a new and unexpected source of profit. The difficulty is not altogether unlike that of the parable which first sent Mr. Ruskin wandering in the paths of political economy. It is the gain of somebody else, and not the loss of the complainant, that forms the ground of complaint. Something of the same kind pervades the whole question of the claim of artists to the profits of the reproduction of their works, and the presence of this something perhaps explains the reluctance of persons like Sir James Stephen to give them any right whatever to such profits, or to compensation for abandoning them.

We subjoin the letter above referred to as appearing in the *Daily News*:—

"SIR,—In the account of the important meeting held at the Grosvenor Gallery, under the chairmanship of Sir Coutts Lindsay, I find both he and those who followed complained justly of the disadvantageous position in which artists find themselves from the difficulty of obtaining legal copyright in their works. Each speaker assumed that the photographer, described as "the owner of a box of chemicals," was in a far better position. Permit me to say that although as regards pot-boilers, ordinary publications, pictures, we are satisfied with the state of the law, yet when we look at what is now one of the most important, as it is also the highest branch of photography—the production of original works containing a distinct artistic idea—we are quite as badly off as the painter. Proprietors of illustrated papers

appropriate in the coolest possible manner art photographs, frequently re-naming them to suit their purpose, and never mentioning the photographer's name in connection with them. This Christmas, one illustrated paper published as a coloured presentation picture a photograph of mine without acknowledgment, and circulated several hundreds of thousands. In this picture was found just the difficulty referred to by Sir Coutts Lindsay. It was not alone a portrait, but it contained a distinct and original art idea; and the payment of a guinea by the sitter was never intended to give him copyright in it, or any right at all, except that of private presentation. The 'religious' papers are grievous offenders in this way, and their letters of explanation have been remarkable for hardness of assertion. The art claims of photography are now beyond doubt. In all exhibitions they are freely accorded positions in equality with other branches of artistic skill; and whilst at one time the stigma of want of art feeling was thrown at us, not without cause, the impression now is that photography is walking in rather too close contiguity with art canons to be entirely pleasing to some.—I am, faithfully yours,
SAMUEL FRY."

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

PRESIDENT'S ADDRESS.

We append the address (left over from our last on account of pressure on our space) of Mr. Thomas Clarke on his appointment as President in succession to Mr. H. A. Wharmby.

THIS is the fifteenth anniversary of the Liverpool Amateur Photographic Association. During the interval of its existence great changes have taken place in the practice and science of photography, and by the patient and unswerving industry of a host of ardent workers, this useful art has been brought to a state of perfection which, in point of utility, enables it to rank as one of the best-known and important sciences of the present day.

When we consider that it is not more than forty years ago that the germs of the photographic art were first brought to light, and that only twenty-eight years have elapsed since the advent of collodion and nitrate of silver bath, it is surprising that a science so small and unassuming in its beginning should have been able to have made such gigantic strides as that of photography.

It must be universally admitted that the influence of our art-science is now felt in every remote corner of the globe; and while the amateur, to whom the art owes so much, delights to make it his especial hobby and companion, and the professional his means of subsistence, the various governments of the world call it to their aid in collating facts with reference to geographical conditions of various countries, which, for strategic and other purposes, is found to be of the greatest reliability and value. In the copying of maps and charts it is largely used, especially by the governments of Germany and Austria; while in the medical world, particularly in the United States of America, it is brought into requisition as a means of recording various forms and stages of disease. The microscopist likewise uses it as a power to enable him to register in an enlarged form the interesting detail of insect and vegetable life, which for truthful delineation and delicacy of result, cannot be equalled by any other known means.

It will be found, on reference to the historical records of photography, that this science has progressed by four distinct stages. In the first place, there was the beautiful process given to the world by the genius of Daguerre, who, in the year 1839, exhibited in London a number of views taken in the French capital, which, for beauty of result, excited at the time the utmost curiosity and admiration. Strange as it may appear, this identical process was selected by the French government so recently as the year 1874 as the one best adapted to photograph the transit of Venus—an event in astronomical science considered to be of the highest degree of importance. Most other governments fitted out similar expeditions to proceed to different parts of the globe to take analogous observations; and although photography has not by any means been eminently successful in the duty it was called upon to perform, yet the process of Daguerre, as worked by the French astronomers, has, I understand, in point of result, given a higher degree of satisfaction than any other process selected either by our own or the representatives of any other nation.

The next advance in photographic science was by Mr. H. Fox Talbot for a process in which a negative picture was produced by means of a sheet of paper coated with a solution of iodide of silver, and afterwards immersed in a solution of gallic acid, nitrate of

silver, and acetic acid, the same solution also being used for developing the image after the sensitive film had undergone the requisite exposure. It was about this time that Sir John Herschel suggested the employment of glass as a support for the photographic film, and we all know with what tenacity that material still maintains its position as the one most suitable for the purpose.

the idea of employing an ethereal solution of pyroxylic acid as the basis of the photographic image was first propounded by M. Le Gray, of Paris, but it was left to Mr. Archer to carry out and improve on the idea which M. Le Gray had suggested. It was in the year 1851 that Mr. Archer published a description of his collodion process—a process which, as you are aware, has given a greater impetus and a higher degree of importance to the art of photography than any other element introduced into the science from that year to the present time.

It was about this period that the original Liverpool Photographic Society came into existence, and although many members of that Society have been removed from our midst, yet it gives me great pleasure to add that there are three or four members of the old Society who still take an interest in our proceedings, and who, I am glad to state, are likewise members of this Association. Permit me to mention the names of Mr. Forrest, Mr. Wilson, and Mr. A. Cook, all of whom have done good and honourable work in the past. The original society worked hard to unravel the mysteries of the nitrate bath, and without doubt assisted equally with any other society in this country to overcome the difficulties and intricacies of the various dry processes of those days.

The next important movement in the photographic art was one in which this Association holds a most prominent and honourable position—a position which cannot be disputed or divided with any other society. I mean the introduction of the bromide emulsion process—a process which is, without doubt, destined to exercise a most important influence on the future of the photographic art. The emulsion process was, as you are all aware, discovered and introduced by Messrs. Sayce and Bolton, the former of whom is still a member of this Association, whilst the latter has recently been appointed to the important position of Editor-in-Chief of "The British Journal of Photography," a publication which likewise owes its origin to our parent Society, and which, under the able management of its late esteemed Editor-in-Chief, Mr. J. T. Taylor, has done much to popularize and forward the progress of the art of photography. I am sure, gentlemen, we all regret the severance of Mr. Taylor's connection with "The British Journal of Photography," as during the interval of his association with that publication, extending over a period of fifteen years, he has done much not only to raise the character of the Journal in its literary capacity, but to impart to its numerous readers, by his clear exposition and great knowledge of photographic chemistry, a vast amount of useful information. As the founders of the journal in question, I am sure this Association wishes Mr. Taylor every success in his new home on the other side of the Atlantic.

Reverting to the question of processes; gelatine was the next progressive step, which for rapidity of action is certainly without a rival. Our excellent ex-President, the Rev. H. J. Palmer, is one of the principal workers in that direction. With a wonderful amount of energy combined with hard work, which only those who work can properly appreciate, Mr. Palmer has persevered with this process from the date of its advent to the present time. He has induced others, both here and in other parts of the kingdom, to lend a helping hand, and by the united efforts of Messrs. Kennett, Bennett, Swan, and Palmer, this process has been brought to a state of comparative perfection. Mr. Palmer individually has been the means of introducing several novelties, and I doubt not his name, as it deserves to be, will always more or less be associated with the gelatine process. Many professional photographers in this town, and also in London, are now adapting this process to the ordinary requirements of studio work, and therefore it would seem probable that a dry process may, after all, ultimately succeed in supplanting a method of manipulation which until now has maintained its position undisturbed during a period of twenty-eight years.

The introduction of a mechanical element, having for its object the equalisation of bromide of silver in an emulsion, is exclusively due to Mr. W. B. Bolton. It seems probable that a washed emulsion, when the principle of preparation is better understood, will become the process of the future. At present a sensitive plate prepared by this process is not always so reliable as could be wished, being at times defective in sensitiveness, or otherwise

iable to spots of a form from which the old emulsion treated with a preservative was to a great extent free.

Many different processes have been worked by the members of this Association during the past season; and, while I have seen some good pictures produced by Mr. Palmer with his favourite gelatine process, and likewise excellent productions by Mr. Potter with a washed emulsion process, I must confess, that individually, I have used for slow work—such, for instance, as landscapes—the old collodio-albumen process, as by its aid I find it possible to obtain a negative on every plate exposed, and, as a rule, a higher class of picture than can be obtained by any other dry process. I have a decided preference for quality above every other consideration, and I verily believe—taking into account the number of spoiled plates which invariably result from the use of any other dry process, nearly every one of which latter I believe I have tried—that I am able to obtain an equal number of good negatives from half the number of collodio-albumen plates. This process has one great advantage which I think is not generally known, viz., an exposed plate being to some extent self-developing, by immersing it for a few hours or (say), over-night in a solution of pyrogallie acid and water of the strength of two grains of the former to one ounce of the latter. Next morning you will be in possession of a soft negative full of beautiful gradation—a quality very difficult of attainment except by this or the wet process.

It is not, however, my intention, neither is it my desire, to depreciate the emulsion process. I continually make plates by that method, and, in fact, it is my intention to use plates which I have expressly prepared by that process in the demonstration of micro-photography, which it would have been my duty to have given this evening, but which, unfortunately, I have been compelled to postpone until a future meeting. At the same time I cannot conceal from myself the important fact—speaking from personal experience in the manufacture of dry plates—that a more perfect film and greater reliability can be obtained from a plate sensitised in a bath than one made by means of emulsion. The fault—if fault there be—is no doubt to a great extent mechanical, as it is well known amongst emulsion workers that there is generally a difference, more or less marked, in the character or behaviour of nearly every batch of emulsion which is made, notwithstanding the fact that an identically similar formula may have been adhered to on every occasion. It seems, however, probable that in future sensitised emulsion will be prepared commercially on a large scale, and probably by that means we may hope to obtain a greater degree of reliability, and more uniformity in the character of dry plates prepared by emulsion than has hitherto been the case.

In my experience of commercially-prepared emulsion plates during the past two seasons I consider there is room for very great improvement. It may have been my misfortune, but certainly during the past summer I met with the greatest disappointment and annoyance from certain commercial emulsion plates which formerly could have been relied upon for excellence and certainty of result. It is doubtful, after all, if there be a better formula for emulsion than one of the original formulæ of Mr. Sayce, which was—

Bromide of cadmium	...	...	...	6 grains
Bromide of ammonium	...	...	...	2 "
Pyroxyline...	...	...	...	6 "
Ether...	...	...	...	1 ounce
Alcohol	...	...	...	3 "
Nitrate of silver	...	...	...	12 grains

with a preservative introduced—or at all events used—by Mr. Phipps, which was composed of tannin, gum, gallic acid, and a trace of albumen.

Turning to other matters indirectly connected with photography, it is probable that the electric light will, in course of time, be much used as a source of illumination in the production of photographic work. It has been found possible during the past year to utilise it for portraiture, and I now hold in my hands two cartes, lent to me by the President of the Manchester Photographic Society, which were printed from a negative by means of the electric light. One negative was held a distance of twelve inches from the source of illumination during an interval of fifteen minutes, while the other was held a distance of twenty-four inches, the time of exposure in this instance having been thirty minutes. The negatives were indiscriminately selected from the stock of a professional photographer in a neighbouring town for the purpose of this experiment. It will be observed the prints are fully exposed, and in every sense undoubtedly illustrate the capabilities and one of the important uses to which the electric light may in the future be successfully applied.

Surely photographers—and especially amateur photographers—are about to enter on their long-wished-for El Dorado at last. In the past rapidity was at one time the great desideratum. Afterwards came a desire for quality, and lastly, an emulsion which would keep indefinitely. These desiderata have now been obtained, for gelatine, collodio-albumen, and washed emulsion fulfil all these requirements.

Is it possible, therefore, except in matters of detail, that any further improvement can be obtained in photographic processes? Perhaps in apparatus some further advance may be made, although several decided improvements have been introduced during the past two years. The question of glass remains just as it was twenty years ago. Is it possible to find a substitute? Mr. Palmer is our "fast man." "Gelatine" is his motto. He says there is nothing like gelatine. It is not only the best vehicle for the sensitive salts of silver, but it is likewise capable of acting as a light and portable support for the photographic film. He says glass is an intolerable nuisance, as when it falls it breaks, and is at all times excessive heavy in weight, which fact he particularly found to be the case when he ascended the Alps a year or two ago. Therefore Mr. Palmer says—"Try gelatine with a touch of ox-gall, and you will be a happy man."

However, gentlemen, in the best regulated societies there is always a difference of opinion. Our excellent original member, Mr. Forrest, on the other hand, totally disagrees with Mr. Palmer. A support such as that recommended is not sufficiently transparent for him. He concurs in the opinion of Sir John Herschel—that there is nothing like glass. However, time will tell, and I hope that he and Mr. Palmer will settle the question between themselves, and perhaps at our next annual meeting we may have some addition light thrown on what to photographers is really a very important subject—glass or gelatine.

PORTRAITURE BY ARTIFICIAL LIGHT FOR AMATEURS.

BY REV. H. J. PALMER.*

FOREMOST among the seemingly utopian photographic ideas which have from time to time occurred to me, there has always been that which I propose to bring before you this evening, namely, the possibility of taking successful portraits by artificial light without the necessity of incurring expenditure and difficulties beyond the ordinary wont of amateurs; and I think that the need of a method providing the means of accomplishing portraiture by night is one which presses more heavily upon us than upon professional photographers. In the first place, there are but few of us who are able to afford the luxury of a properly-constructed studio, in which the portraits of friends may be achieved with artistic management of the light; and, in the next place, it is at night mainly, when the various avocations of the day are over, both that we ourselves have leisure to pursue our photographic practice, and also that our friends are able to submit themselves to our manipulations.

At the beginning of last Christmas vacation I set to work to see if this desideratum was in any sense obtainable for myself; and the result of my holiday photographic employment has been so encouraging and successful that I feel warranted in bringing the subject forward to-night as matter which, whether in discussion or in a practical demonstration, may be of general interest.

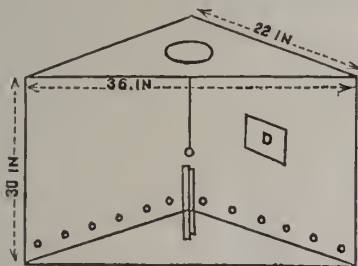
I will not cuter into the subject of other researches and experiments in this direction, since I see that this has been done ably in the last number of the *British Journal*. I propose briefly to describe the simple apparatus which, after many failures and much experimentalising, I have adopted, and I do so in the hope that other workers may be able to effect improvements and satisfactory modifications of the method I propose to lay before you this evening.

My early efforts were made with magnesium wire, but I found it impracticable to use this without the somewhat expensive assistance of clockwork machinery. Phosphorus ignited upon saltpetre gives an exceeding bright and actinic light; it is, however, such an exceedingly hazardous proceeding to use it in any way that I speedily gave up

* Read before the Liverpool Amateur Photographic Association.

experimentalising with it. Messrs. Broek, the pyrotechnists, have prepared a compound of equal excellence as regards activity, but possessing the advantage of being entirely free from dangerous properties. With the light from this compound directed upon the sitter through the condensers of a lantern, I ascertained that I could obtain a good negative with the full aperture of a carte lens, and upon a Swan dry plate, in thirty seconds. The condensers of the lantern for this experiment were placed at the distance of a yard and a-half from the sitter. I found that, when desirable, half-tone was easily obtained upon one side of the face by, in the first place, widening the angle between the direction of the rays from the lantern and the axis of the lens; and then, by burning on the opposite side of the sitter, at a greater distance from him, but at a corresponding angle, a quantity of the compound about half of that burnt in the lantern; the result of this arrangement was successful, but not, however, conducive to the comfort of the sitter, and I therefore constructed the lantern which I have here, in which the light is softened and diffused through a linen medium.

This apparatus answers sufficiently well, and it has the merit of exceeding simplicity and inexpensiveness. I may describe it best as a diagonal section of a large but light packing-case, with a circular aperture at the top six inches in diameter. There is a row of small holes along the bottom of the two sides; a little door in one of the sides; and the front filled in with a light framework of lath, over which I have stretched a sheet of linen. The opening at the top gives egress to the products of combustion, those at the bottom are for the supply of air to the flame, and the door at the side is for the ready ignition



of the pyrotechnic compound. The stand for burning the latter is a light column of wood, on the top of which I have nailed a piece of tin. Thus the fire is raised to a central position in the lantern. The dimensions of the two triangular pieces at the top and bottom are thirty-six inches on the longer side, and twenty-two inches each on the other two. The height of the box is thirty inches.

The light power might be considerably increased by the use of reflectors; but this I have not found necessary, and therefore have not employed them.

The best position for the lantern is about $4\frac{1}{2}$ feet from the floor, at the distance of $1\frac{1}{2}$ yard from the sitter. This arrangement may, of course, be modified according to the greater or less sensitiveness of the plate employed.

I have not seen the Moule lamp, and know nothing of its construction. I do not think, however, that there is in this apparatus of mine an infringement of any patent rights.

My plan for getting rid of the smoke evolved is simple in the extreme, and, as you will see presently, is efficient enough, provided the chamber is sufficiently capacious.

I have here a number of common hand-boxes, from some of which the bottoms and tops have been removed, and the whole are pasted together so as to form a chamber of the lightest possible material. An aperture at the bottom corresponds in size with that of the opening at the top of the lantern; and, on being placed in position, this chamber suffices to hold the smoke evolved by one of the lights.

When the portrait has been taken the hand-box is inverted at the fireplace or in the open air, and the contents at once pass off.

The actinic compound is sent down by Mr. Broek in any quantities at eightpence per pound; but I have suggested to him that it would be a great advantage to photographers if he will supply the light ready made up in packets to burn from thirty to forty-five seconds. Meanwhile, I make my own packets as follows:—A sheet of brown paper is cut up into strips two inches wide, and these are pasted with ordinary paste. A common wooden roller, two inches in diameter, is past over the strips, winding each into a small ease. After pasting on a bottom of paper the tube is filled with the compound, and the latter rammed down. The top is now closed with thin paper, and the light is ready to be placed in position and “fired off” upon a sitter.

I have extemporised a background for these portraits by using the white back of a large map upon a roller, the surface being curved evenly into the shape of an alcove; but I believe that equally good results may be obtained without the employment of a background at all. I place the lantern at a distance of a yard and a half from the sitter, with the lens and camera in close proximity to the apparatus. The focussing is readily done by gaslight, and when it has been accomplished the slide with a Swan plate is placed in position, the shutter drawn up, and the cap removed.

The pyrotechnic compound is now ignited, and an exposure of from forty to sixty seconds is given. I cannot give any advice as to the position of the sitter, because I am not an experienced portraitist. It will be obvious, however, that the eyes of the “victim” should be directed towards the shaded portion of the room, and not towards the lantern.

We will now proceed to put the apparatus to the test, and I hope that the result, when the negative has been produced and developed, will prove in some sort a justification for my temerity in bringing this subject under your notice this evening.

PHOTOGRAPHY AT THE BANK OF FRANCE.

THE Bank of France would appear to have hit upon an ingenious method of treating doubtful customers. The establishment has for some time past availed itself of photography, and among its officers is a photographic detective, to examine suspicious documents though the medium of a camera, which under some circumstances exercises a sharper vision than the human eye. Where an erasure has been made, for instance, the camera detects it at once, let the spot be ever so smoothly rubbed over, while a word or figure, that to the eye has been perfectly scratched out, is clearly reproduced in a photograph of the document.

If we are to believe a recent account, the Bank of France has now added to its precautions an invisible studio placed in a gallery behind the cashiers. Hidden behind some heavy curtains is a camera, ready for work, and at a signal from any of the cashiers, the photographer proceeds to do his duty by depicting the particular customer who may be standing at the desk. The clerk engages the man's attention, and in a few moments the portrait is taken, and the Bank in possession of a photograph which may hereafter prove of value. The camera is then fitted with a fresh sensitive plate, and stands ready for use upon another emergency. How far such an arrangement could be of practical value remains to be seen, but the principal banking establishment in Paris has certainly to thank photography for the discovery of several frauds of late.

A photographic laboratory and requisites form part of the institution, and most of the officials themselves have to submit to the process of being photographed, so that the direction may be in possession of their portraits. This practice, it is held, is a deterrent against evil ways, for should any of the clerks be tempted to go astray they know very well that they leave records of themselves behind.

The same system prevails among the Paris Police, where every one, from the highest to the lowest, is photographed. The Paris Police, indeed, employ photography to a very great extent nowadays for the detection of crimes, and a large photographic establishment is to be found at their headquarters.—*Daily News*.

The Photographic News.

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FINE ART COPYRIGHT.

THE question of fine art copyright still continues to occupy a large share of attention in the daily press, long letters and leaders appearing in various journals. The *Times*, returning to the subject, fails to see that the balance of argument is on the side of the artist. If, on the sale of a painting, the copyright must accrue silently to one of the parties in the bargain, unless stipulation in regard to it be made, the *Times* thinks the purchaser should have the advantage. The painter is more likely of the two, it is urged, to know the value of the intangible property attaching to the picture, and to raise the question of retaining it or receiving its specific value, than the purchaser, who is not unlikely to be in a state of dove-like simplicity and innocence, never dreaming of acquiring or losing anything but the painting itself. As professional picture-dealers form the larger class of purchasers direct of the painter, common experience will, of course, confirm the estimate the *Times* forms of their innocence and simplicity in making bargains! The strong argument of the *Times* for the copyright passing with the picture itself is based upon the *prima facie* inconvenience of separating the actual possession of a picture from the intangible and incidental value of the copyright or right to multiply copies of it. But this surely should create no serious difficulty. Analogous cases are not wanting. A farm is let, whilst the right of shooting game over it is reserved. Land is sold, whilst the right of working minerals which may be found underneath it is reserved. But if this form of argument be of any value, it is essentially useful to the photographer, even if it militate against the painter. We admit that in relation to photography it would be difficult to separate the copyright from the negative, and the possession of the negative would naturally, in the absence of stipulation of any kind, give possession of the copyright therein. In fact, although the Royal Commission recommends that in portraiture the copyright shall belong to the sitter, or to the person commissioning or ordering the portrait, a memorial presented to the Government by the Royal Academy seems to be written under the impression that the copyright always accrues to the photographer. The memorial in question, setting forth a hardship of the painter's case, says:—

"The traditional idea of giving to the author or artist copyright in his works is embodied in the report in all that affects literature, dramatic literature, and music.

"In sculpture the Royal Commissioners recommend that sculptors shall have the fullest rights extending not only to

portraits, but to copies from ancient or other statues, and over photographs and drawings done from the sculptor's works.

"And in photography, that the copyright should be given to the photographer (he being by custom the proprietor of the negative). The ownership and the profits that accrue therefrom to remain with him in all cases; but when the photograph is taken on commission, copies are not to be sold without the sanction of the person who ordered it."

Whilst, it is pleaded, in regard to painting, there is to be a complete reversal. If, as regards photography, the provision is to be as stated by the memorial, photographers will have little of which to complain, and it may be prudent to put aside anxiety on the subject, at least, until the Bill is drafted, and the provisions of the intended law somewhat definitely formulated.

A REVOLUTION IN THE STUDIO.

WE invite the earnest attention of every photographic portraitist to Mr. Hazard's paper read before the South London Photographic Society, printed on another page. It describes a very definite step in the revolution in work in the studio which we have more than once expressed a conviction must inevitably soon take place. For the past three months, as a portraitist, Mr. Hazard has not used the negative bath in his business. How many more may have had the courage to make a similar experiment we do not know—probably many—but this is the first record of the entire abandonment of the negative bath. Very many able portraitists have been trying extra sensitive dry plates in studio work, and without a single exception, so far as the record reaches us, with complete success. One and all of many who have communicated their experience, have been surprised and delighted with the results. The rapidity has been marvellous, and the results charming.

It is natural, however, that the change should be made somewhat slowly. The skilled photographer who has mastered the wet process, which is worked in his hands with an even average degree of success, which satisfies him, is not anxious to change. Whatever may be the faults of the wet process, "it is," he exclaims, "good enough," and change always involves trouble. Old portraitists, who five-and-twenty years ago worked the Daguerreotype process, saw, with great dismay, that beautiful process superseded by the introduction of collodion. The Daguerreotype process was a dry process. It required very precise conditions; but, when these were duly secured, it gave great certainty of result. It was comparatively clean, and free from the "sloppiness," "mess," and uncertainty of wet collodion. But the change was not one of choice: it was inevitable. A new method must be acquired, or business must be given up, and there were some who preferred the latter alternative. No imperative pressure will, however, compel the portraitist to adopt dry plates in his studio in place of wet collodion. He who persistently adheres to the latter, however, will be placed in an inferior position when compared with his more advanced fellow practitioner, who, working with more sensitive plates, will excel in securing expression, taking babies, and in pleasing the public generally. No time being wasted in preparing plates, the sitter is detained a shorter time, and the sitting of twenty seconds being reduced to two, there is absolutely no time for moving. Waste by boiling down and otherwise doctoring baths will be abolished. The headaches and weariness arising from breathing ether and other villainous fumes of the dark-room will be abolished. In fact, an advantage is gained in every step which admits of comparison, and no loss of any kind that we can see. In place of the multitude of operating troubles of the photographer, there now awaits him, as Mr. Hazard has experienced, "calmness, peace, and joy"! We hail such a revolution for our readers with gladness.

LIGHT, AND ITS WORK IN ABSORPTION.

BY CAPT. W. DE W. ABNEY, R.E., F.R.S.*

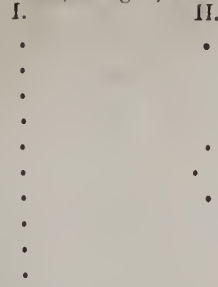
I HAVE selected a very large subject on which I am to address you to-night; but I may say that I did it purposely, as it left me the choice of attacking any particular point that I might desire. I asked whether I might give you a scientific discourse, or whether I must confine myself to a popular explanation of some phenomena; and in a letter in reply to my query, the latter course was suggested, since it was stated that *at present* my audience was not advanced enough to take in anything beyond popular exposition. To those, then, who expect something startling or novel to be set before them, I must at once say, to-night you will not have it. I shall be elementary; in fact, so elementary, that I hope I shall be in the comprehension of all, or, at all events, of the majority. Now confession is good for the soul, so I must unburden myself to commence with, and tell you that I am guilty of calling my subject by the wrong name, though I daresay at first you will not perceive my mistake. Had I called it radiation and its work, I should have been nearer the mark scientifically, as you will perceive as I go on.

What is light, and what work does it perform? Light is a sensation, nothing else; it is the sensation of *radiation*, and the sensation is caused by a chemical process taking place within the eye. Now, you may say, you are explaining a fact which we all know well, by telling us it is something else. What is a radiation? Let me take you in imagination to the sea shore, and when there let us imagine we have a heavy swell running in towards the shore from the horizon, and that anchored a short way out is a boat with a load of men in her. The swell comes in, and the boat tosses about, rising and falling, it may be, five or six feet. If you had that boat with its load on shore, and tried to raise her five or six feet, you would find that you would have hard work to accomplish your object, which the water can do with ease. In other words, if you did raise it, you would really be performing the absolute mathematical work which the wave can do. The enquiring mind will at once ask, how it is that the waves can do with so much ease, what you can do with difficulty? Whence comes the capacity for doing it? Probably if we traced the swell to its origin we should find that a gale had been blowing over the water, and first one puff had caused a small ripple, than another, which made the first grow bigger, and so on, till we had large grand waves formed coursing after one another towards the point at which we were standing. We all know that the wind can press hard against us, and cause us to do work, or exert force to resist it; and in reality it is the energy of the wind in the distant sea which is conveyed by the wave's motion to lift the boats.

If we traced the matter still further, we should find that the wind was really transforming a part of the energy existing in the sun to the water, and that the prime cause of the work performed in lifting the boat was the sun. However, another point requiring attention is, that the portions of the waves which do the work are diminished in height, and a boat immediately between us and the one in question would not be nearly so much tossed about. Now, we will transport ourselves back to this lecture theatre, and apply the lesson learnt. But we must exercise our imagination a little further. Imagine ourselves (as we are) in the depths of an infinitely deep ocean of a something which is infinitely more elastic, that is more pliant, than our air, which can carry waves from the sun and stars to ourselves—and imagine, instead of the wind blowing on the sea to create the waves, that we have some small particle which vibrates rhythmically in one of these distant bodies. Then, since the ocean in which we are is infinitely pliant, the motions of that vibrating

particle will generate waves in it, spreading out in all directions, and travelling onwards till they reach us and pass us by.

Perhaps a diagram, which I can throw upon the screen, may be of use in showing you what I mean by wave-motion. Here we have, in fig I., a set of particles in a



straight line. When the apparatus is slightly turned, we have the particles arranged as in fig II., and oscillating backwards and forwards give the appearance of a series of waves, each one following its predecessor at an uniform rate. It will be noticed that the particles themselves never move forwards, but only across the direction of wave motion. These small waves then carry to us the energy that exists in the vibrating particle, far distant, and if we can stop the motion of the wave by any means—that is, annihilate it—it will be capable of doing similar work, which particle itself could execute, since, unlike the wind on the water, which is not perfectly pliant, it expends nothing in setting our ocean in motion. Well, how can motion be stopt? Waves of certain lengths can be stopt by the retinae of our eyes. There the wave meets with an opposition, and the work of the particle vibrating in the sun or star is transferred for execution in the eye.

And here let me say, that the work it does is that it chemically alters the constituents of a tissue which lies in the eye, and the fact of this alteration taking place gives us the sensation of light. The waves which emanate from the vibrating particle are called radiations, and evidently these radiations are carriers of possible work. Now in this medium waves of any length between certain limits can be generated, and it is quite possible, and is often the case, that all of them may be generated by a vibrating particle, and that, consequently, those wave lengths are present which give us the sensation of light. We shall see presently that the sensation of white light is in reality the sensation caused by a combination of wave lengths, which individually give the sensation of colour. We can now strictly define what light is. It is an exhibition of work, or the effect of work done, on certain matter which exists in the tissues of the eye. Take away from a man or alter in composition this matter, and we should say he is blind, that is, he has no sensation of radiation as light.

(To be continued.)

BEECHEY DRY PLATES.

BY A. A. MANTELL, M.D.

In the YEAR-BOOK for 1879 I observed that "Photo-Chemicus" has alluded to my remarks regarding Canon Beechey's emulsion process which I made in the YEAR-BOOK for 1878.

When using the preservative recommended by Canon Beechey I invariably employed a substratum without any blistering of the film, and it was only when experimenting with the gum-gallic preservative that this annoyance was experienced. My meaning was not expressed with sufficient clearness, although the adverb "however" would appear to qualify the sentence. I am sorry "Photo-Chemicus" cannot give a more favourable report of his further trials with the emulsion, for I consider his being unable to secure more than three perfect plates out

* Lecture delivered at Chesham, Cheshire, at the Literary Institute, 24th January, 1879.

of four coated unsatisfactory. Supposing in a photographic tour every fourth, and consequently imperfect plate, was exposed on a subject most desirable to secure, what annoyance would accrue to the photographer on returning home, perhaps from a long journey, to find that he had failed in the very pictures upon which he had set his heart! "Photo-Chemicus" particularly draws attention to the importance of adding the silver nitrate very gradually, whereas Canon Beechey, in an article published in the "British Journal Photographic Almanac" for the current year, recommends preferentially the pouring of the solution in one thin but continuous stream into the collodion.

My experience accords with Mr. R. Gordon's, that the first few plates coated may be free from spots; they then appear, and it is impossible to get a plate free from them without re-filtering the emulsion, and even then I have seldom succeeded. I called at Messrs. Rouch's establishment last spring, and asked to see any specimen prints from their Beechey plates. A few were shown, but I must say I was disappointed in them.

Should I be asking too much of "Photo-Chemicus" to send me a good specimen print from one of his own Beechey plates to look at? I would return it without delay. By this means I should be enabled to form far better opinion of the value of the process than by reading any number of articles on the subject.

Honiton, Devonshire.

GELATINE PLATES IN THE STUDIO.

BY J. S. HAZARD.*

Nor having used the negative bath in my business for the past three months—having done all my work with gelatine plates—I have had many conversations with photographers on the subject. Some I find quite prejudiced against the process; others indifferent; whilst many are anxious to know what may be done. Inquiries from the last of those have induced me to read this plain, matter-of-fact paper on the subject; and I trust it will be so plain that beginners with dry plates will be encouraged to persevere, and that operators will be induced to acquire a knowledge of the process, and to keep in practice, as one of the questions to be asked in the future when a situation is applied for—"Can you work the gelatine plates?"

My first experience with these plates occurred in the first week of November last. After trying a few plates, and succeeding in producing negatives which I knew would have been impossible with wet plates, I was so convinced there was something good in the process that I at once built a special dark-room for their use, finding that my ordinary dark-room let in too much light.

Unfortunately, I have not had time to test all the plates in the market, but have postponed until better days the few experiments for which a professional photographer can find time. One kind—those of Wratten and Wainwright—were favourably recommended to me. These have proved all they professed to be, and I have got all I wanted from them in the studio.

I use the plates in the following manner: Having with care examined the dark slide, camera, and dark-room, to be certain they are light-tight—and upon this point I cannot speak too strongly, as many failures arise from its neglect—I come to the sitter. Here I find I must be sure there is plenty of contrast represented in the coming picture—in fact, must light rather harshly, as in development the shadows are apt to be destroyed, the plates having such a tendency to produce detail, and hence arises a danger of flatness. The exposure has been reduced one-eighth or one-tenth of the ordinary time for wet plates, some negatives, exhibited to-night, having been taken in one or two seconds during the dull, foggy days of last month.

To develop: I place the negative in an ebonite tray,

covering it well with tap water. I let it remain there whilst the developer is being prepared (in my practice I always use plenty of solution—quite enough to cover the negative, as I find the atmosphere causes a scum on the solution which is apt to stain the film); hence for half plates I always use two ounces of water with six grains of pyro., to which are added three drops of—

Liquor ammonia	...	...	...	1 ounce
Water	...	...	...	1 "

pouring the water out of the tray. The plate is covered with this for a few seconds; then are added as many drops as may be deemed necessary of—

Bromide of ammonia	...	...	80 grains
Liquor ammonia	...	...	1 ounce
Water	...	...	2 ounces

As a rule, when I think sufficient exposure has been given, I use sixty drops of this; if a short exposure—say through a child having moved—I use one hundred drops. To show what may be done by modifying the developer I produce two negatives—marked "H" and "S" ("hard" and "soft")—of the same person, each having received precisely the same exposure. The negative marked "H" was developed by the formula mentioned; that marked "S" by three grains of pyro less in the developer. The development must proceed until all the detail is out. If it "hang fire," a few drops of the water and ammonia solution will hasten it. It ought to take very little more time than a wet plate. When developed, the negative is well washed, and then fixed in hypo, cyanide destroying the intensity very quickly. The fixing must be prolonged after the negative appears to be fixed, or stains will manifest themselves when the negative is dry. After washing thoroughly it must be allowed to dry spontaneously in a place free from dust.

Should it now appear to be not quite intense enough, it may be strengthened by silver and iron. In practice, however, this is seldom required.

When varnished the negative will be found to require much less retouching than a wet plate, being full of rich detail and delicacy; and, although taking somewhat longer to print, it will produce results quite equal to the "doomed" wet plate.

I claim, then, for the gelatine plates the following good qualities:—Their extreme sensitiveness—hence their adaptability for portraits of children and invalids at home, and also for catching better expressions in portraiture; their quick and easy development; their freedom from granulation (for the deposit is a mere stain), and thus for enlargements we get much richer results. They abolish from the studio that old abomination, the head-rest, also the smell of collodion—a great annoyance to customers. In the dark room ether, alcohol, glacial acetic acid, and cyanide of potassium must cease to wage war against the photographer's health. On busy days they will prove a blessing; for, not only being always ready for the sitter "who cannot wait a minute," they can also be exposed and the development postponed until the close of the day. No more split films, or saying "good-bye" to them as they slip down the drain-pipe! No more dirty fingers, as the negatives need never be touched until they are washed! No more boiling or testing of baths, or spilling of silver solution; but calmness, peace, and joy in the use of gelatine dry plates!

NOTES ON THE PLATINOTYPE PROCESS.

BY W. WILLIS, JUN.*

THE principles upon which the platinotype process is founded have been so frequently published that I will not occupy your attention by any restatement of them.

In the old or first-described process it was found necessary, in order to get an image which would adhere to the paper, and which would be free from granulation, to introduce a salt of silver. This introduction of silver necessitated the use of hyposulphite of soda. Now you all know that silver

* Read before the South London Photographic Society.

and hypo. bear a bad name, and the use of them in the process gave it a blot which I was anxious to remove. After some laborious experimenting I discovered a method by which both of these objectionable ingredients could be dispensed with, and purer results obtained, in a wonderfully simple manner, by the use of only one reducible metal—platinum or iridium.

The new process may be described in a general way as follows:—Paper is coated with a mixture of platinum and iron salts, and then dried. It is now exposed under a negative; after exposure it is floated for a few seconds on a hot solution containing oxalate of potash and a salt of platinum. This solution develops the print, which has then merely to be washed in a weak solution of acid to remove the iron salt from the paper.

I will now proceed to give a detailed account of the manner in which the process is actually performed.

The chemicals made use of are the following:—

A solution of ferric oxalate containing about 120 grains of the salt in each ounce. This is the iron solution.

A solution containing thirty to forty grains of potassic chloro-platinate, and three to four grains of plumbic chloride. This is the platinum solution.

A solution containing in each fluid ounce 120 grains of potassic oxalate and seven grains of potassic chloro-platinate. This is the developing solution.

A sheet of suitably-sized paper is placed on a glass plate and held there by any convenient means. The sensitiser is made by mixing equal quantities of the before-described iron and platinum solutions; two drachms of this mixture are now placed on the paper, and spread evenly over it by means of a piece of flannel wound round a glass rod. The paper is then hung up to dry, and as soon as surface moisture has disappeared the drying is finished before a fire or stove. The sensitised paper is now ready for exposure under a negative, which is done in the usual manner. The right exposure may be determined by inspection or by an actinometer. I prefer the latter as being more simple. A sufficient quantity of the developing solution is then put into an enamelled iron dish, and heat is applied underneath until the solution has nearly reached the boiling point. The exposed prints are now floated on this hot solution for two or three seconds; the image, visible on the papers before they are thus floated on the developer, consisting of a sub-salt of iron, is dissolved by this solution, and in its place is left a picture in pure metallic platinum. When removed from the developer the prints are washed for a few minutes in a very weak solution of oxalic or citric acid, and are then finished by washing for half-an-hour in three changes of plain water.

In sensitiveness the process is about three times as rapid as silver. The sensitised papers and the exposed, but undeveloped, prints have been kept in a dry state for upwards of two months without any deterioration. They may probably be kept for a very much longer period.

You all know that platinum is one of the most permanent substances with which we are acquainted. The prints made in that metal by this process are, practically speaking, impregnable. I have not succeeded in injuring them by any reagent, save only hot *aqua regia*.

PHOTOGRAPHIC HEADS IN PAINTED GROUPS.

AN action, *RIDLEY v. TUCK*, which was heard in the Court of Exchequer, contains many points of interest to photographers:—

Mr. Murphy, Q.C., and Mr. R. Bray, were counsel for the plaintiff; Mr. Talfourd Salter, Q.C., and Mr. Phillips, appeared for the defendant.

This was a case of some interest to the artistic world. It is an action by an artist against a seller of photographs in Regent Street, to recover 150 guineas, the price of an autotype picture, to be painted by the plaintiff, of the Pan-Anglican Synod, containing portraits of at least eighty of the Bishops; the defence being that before any money was to be paid, a preliminary

sketch was to be done, and if this was approved by the defendant and Mr. M'Lean, of the Haymarket, then the order was to be confirmed. As this condition precedent had not been performed, no money had been earned.

After Mr. MURPHY had opened the plaintiff's case,

Mr. Ridley was called, and stated that he lived in Buckingham Palace Road, and had been an artist for twenty years; he had done a group of the Royal Family, which had appeared in the *Graphic*. The drawing was his, but the heads were filled in with photographs. The defendant wished him to execute a similar work for him, and the price was to be fifty guineas, half to be paid at the commencement of the picture, and half at its completion. He had finished this picture and had been paid in the summer of 1877 by two cheques of £25 and £20 from Mr. M'Lean. In September negotiations were opened for painting the Pan-Anglican Synod in the same way with the defendant, and the plaintiff, in a letter of the 11th of October, said his lowest price was 150 guineas. The defendant said he was to buy the photographs himself, and not to tell the price to Mr. M'Lean, as he would probably object to spending so much money. The drawing was commenced on the same terms as the Royal Family group in December, and in three weeks a group was prepared, which was shown in Court, about half finished in black and white, with some of the faces just sketched in. The plaintiff was then asked by Mr. Salter if he had not received a letter from the defendant saying a preliminary sketch was essential in October, but the plaintiff denied ever having received such a letter, though he had written to the defendant saying the work was ready for inspection. This, however, the defendant afterwards denied. In February (Mr. Ridley continued) I called on the defendant, and he asked me how the drawing was progressing. I asked him when could he come and see it? Why had he not done so before? The defendant seemed astonished, and said he thought I had given it up. I said, "No; have you not received my letter?" But he said he had not. After three weeks I called again, and again asked the defendant when he would come and see the picture. He said he and Mr. M'Lean had quarrelled, there had been a "brush" between them, and he dared not ask him to go just then, as he was so angry and irritable. But he, the defendant, was going to marry a rich young lady, and that would smooth Mr. M'Lean over and square matters with him. The defendant frequently said he would come to see the picture, but he never did. In March my solicitor wrote asking for the seventy-five guineas, and this action was commenced in April. One hundred and fifty guineas is a fair price for this picture; indeed, very little, as it is two-thirds finished.

Cross-examined.—The *Graphic* picture was the first in which I adopted the plan of filling in the heads with photographs.

Mr. SALTER.—Then you left vacant spaces for the heads that the resemblance might be the more striking?—Yes.

Cross-examination continued.—There was no preliminary approval of the sketch in the first picture. I received the first payment at the commencement of the work; they did not approve the sketch before I got a shilling. I received some pay when it was commenced; the design had not to be approved before the order was given. The design, however, had advanced to as far as this (the picture in dispute) before I received any money. The arrangement in the second was to be the same as the first case, and my first payment was as early as was agreed to. Both Mr. Tuck and Mr. M'Lean saw the picture, but they had nothing to do with approval, though they said they liked it. It was not a condition of payment that it was to be approved at that stage, though they had to see the work. Pressed by his Lordship, the witness said it was necessary that they should approve before I got my first payment. I had no order to proceed, but I went on with the work. I cannot say how much longer this picture would have taken to finish—two or three days, or longer; but it took three weeks' continual work to arrive at the present stage. The Royal Family group took a week to arrive at this point. I did not know the Bishops by appearance, except three or four, well enough to remember their features. I had to guess at the bodies, and then to suit the heads to them.

Mr. Justice HAWKINS.—Do you draw a lot of bodies of different sizes, big and little, and then stick a head on, and say that will do for him?

The Witness.—Just so, my Lord. You allow three heads for the size of the body, and you judge from the type of the head and shoulders. Mr. Tuck objected to the picture of the Royal

Family being so low, and to the straight line of heads in the background; but they did not alter the picture. I suggested the introduction of a dog into the picture, but that is addition, not alteration. It certainly was not a condition that they should approve. The order was given a few days after October 11. I began early in December, and I saw the defendant before February. He did not then say so many months had elapsed that he thought I had given it up. I said the picture was in an advanced state; he did not say I ought not to have advanced so far till he and Mr. M'Lean had approved it. I asked the defendant for a cheque, but M'Lean was finding the money. I could not do anything more than I did. The present picture is worth £100. The plaintiff's case, after a short re-examination, closed.

Mr. T. SALTER then opened the defence, and said the action was premature, as the agreement had not been performed. Mr. M'Lean had a good name to keep up, and would not pledge himself to accept a picture of the Pan-Anglican Bishops grouped in a way he knew nothing of, anyhow Mr. Ridley might choose. One person misplaced might make the whole thing ridiculous. It was a difficult matter to arrange the Bishops according to etiquette, putting the prominent ones in commanding positions, and the Colonials, he presumed, in the back rows.

Mr. Tuck was then called, and said he was an artistic photographer. It was a distinct understanding with the Royal Family picture that it was to be submitted to him and Mr. M'Lean before any money passed, and the Synod picture was to be on the same terms.

Cross-examined.—We had agreed to bring out the Pan-Anglican Synod if the sketch was satisfactory. The price was not definitely settled at 150 guineas, but no other sum was mentioned. The plaintiff said nothing about half payment on commencing.

Mr. M'Lean, a publisher of engravings in the Haymarket, was then called, and said he was not present when any bargain was made. He was much engaged, and certainly away from town between February and April, 1878.

Cross-examined.—The defendant asked me to go and see the work. I promised, but did not go. It is the invariable rule for artists to submit a preliminary sketch before receiving an order. Some artists might do this much work—i.e., the present picture—in two or three hours; others would take as many days or more. I did not think there was any particular occasion for going to the studio in February.

After hearing the counsel for the defence, the judge summed up, and the jury then said they found the plaintiff's version the correct one.

His LORDSHIP.—That will be a verdict for the plaintiff for seventy-five guineas. Cannot you come to some terms to complete the transaction? Here are the terms that seem just to me (handing down a piece of paper).

After a brief consultation,

Mr. MURPHY said his client agreed to take £95 and give up the picture.

His LORDSHIP.—That is very fair. These things, gentlemen, ought always to be reduced into writing. All this direct conflict has arisen out of this. I should be sorry to think that your verdict was based in any way on the supposition that either the plaintiff or the defendant had told an untruth.

Several jurors.—Oh no, my Lord, not in the least.

Correspondence.

SOLIDIFYING OF GLACIAL ACETIC ACID.

SIR,—As an amateur, I do not photograph in winter for lack of opportunity. I have a little dark room which serves me as photographic "parlour and kitchen and all;" it is glazed with ruby glass fitted in an inner frame. On a shelf, amongst other chemicals, stands a bottle of glacial acetic acid. During the late frost the thermometer was very rarely above 32°, as the little room is built out and very exposed; yet the glacial acetic acid remained quite fluid, and I thought something was wrong with it, as water placed in the room rapidly became a block of ice.

I had occasion to go in the room yesterday; thermometer

at 50° (acid fluid). I removed the ruby glass for repairs; after a short time again went to the room and found the acid solid. Is it known that the acid does not become solid in red light at the same temperature as it will in white? —Yours obediently,
E. P. P.

MUFFINS AND PHOTOGRAPHY.

DEAR SIR,—Your correspondent of last week has, I think, made a mistake as far as he is concerned. During the conversation I had with the man I met at St. Lawrence, he gave me a photograph, which I enclose, with description.

The letters upon the barrow were yellow, not black shaded with red; and the word "Ramsgate" was not upon the barrow, simply because the man did not belong to Ramsgate.

If the muffin photographer of last week is the same man that I saw and held conversation with, he will be able to give a faithful description of the photograph; and if he fails to do so, why then I shall expect him to stand a plate of good muffins well buttered for tea.—Truly yours,

41, Queen Street, Ramsgate.

A. J. JARMAN.

P.S.—Next week I wish to say a few words on a curious phenomenon in dry plate photography.

PHOTOGRAPHIC USE OF OXALATE OF IRON.

SIR,—As an old reader of the PHOTOGRAPHIC NEWS, I am well up in the history of photographic processes. I was somewhat disappointed, during the recent discussion as to the original use of oxalate of iron, to find no reference to a valuable piece of evidence. Just five years ago a letter from Sir John Herschel appeared in your pages making certain reclamations in regard to cyanotype processes, and in the following week's issue a letter appears from Dr. Phipson, in which he says: "The letter by Sir John Herschel in your last number gives me an opportunity of establishing in your weekly circulating columns my priority to the process of obtaining photographic proofs by means of oxalate of peroxide of iron. The learned physicist just named owns that in making his interesting researches upon the action of light on salts of iron he never employed the oxalate of iron." He then proceeds to give details of his own discovery, referring to the record of it in these pages which has recently been mentioned. Sir John made no reply to this letter, practically acquiescing in its claims, as, having written in the previous number, he was presumably in the habit of seeing your journal. I have referred to this correspondence as settling the question more satisfactorily than any amount of inference.—Yours respectfully,
LOOKER-ON.

[Sir John Herschel received the PHOTOGRAPHIC NEWS, regularly, and made frequent communications through its pages.—Ed.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE annual meeting of this Society was held on Tuesday evening the 11th inst., in the Water Colour Gallery, Pall Mall, Mr. JAS GLAISHER, F.R.S., in the chair.

The minutes of the previous meeting having been read and confirmed, two gentlemen, whose names we have not at present, were elected honorary members of the Society.

Messrs. W. S. Bird, R. C. Murray, and W. Cobb were appointed scrutineers of the voting papers for the officers for the ensuing year.

The Council's report was then read by Lieut. E. DARWIN, R.E., and a vote of thanks, proposed by Captain ABNEY and seconded by Mr. P. MAWDSLEY, passed to the Hon. Secretary for his services.

Mr. JOHN SPILLER, F.C.S., then read the Treasurer's Report, and entered into explanation of the Society's financial position, which was considered to be eminently satisfactory.

A vote of thanks was carried unanimously, on the proposition of Captain ABNEY, seconded by Mr. T. SEBASTIAN DAVIS, who spoke to the onerous character of the duties involved.

The PRESIDENT then called for a vote of thanks to the Auditors, which was, of course, carried, and, alluding to the Progress Medal of the Society, stated that its award was still under the consideration of the Council. He hoped that during the year sufficient progress would be made to enable them to make the award at the annual meeting. Referring to Captain Paget's prize, he stated that a committee of adjudication had been formed, and he hoped they would soon be in a position to make a report. He believed that the presentation prints would be, in the course of a few days, ready for distribution among the members.

A vote of thanks to the President was proposed by Col. STUART WORTLEY, seconded by Mr. W. BEDFORD, and duly passed.

Mr. GLAISHER responded. He believed that he was one of the oldest members of the Society, as, at King's College, Conduit Street, and in their present rooms, he had almost always been present at their meetings.

The following gentlemen were duly proposed and elected members of the Society:—Rev. Chas. E. Few, Messrs. Albert Grant, M. L. Tromp, and Hanwell Williams.

The Scrutineers having handed in their report, the following were declared elected to fill the places of the retiring officers:—

President.—Mr. James Glaisher, F.R.S.

Vice-President.—Mr. J. H. Dallmeyer.

Treasurer.—Mr. John Spiller, F.C.S.

Hon. Sec.—Lieut. C. Darwin, R.E.

Council.—Messrs. W. Bedford, L. Warnerke, G. Wharton Simpson, Prof. G. G. Stokes, Col. Stuart Wortley, Lieut. C. Darwin, and, to fill the place of Mr. J. H. Dallmeyer, elected vice-president, Mr. F. York.

A paper by Mr. John Harmer was read on "A New Camera for the Studio."

Capt. ABNEY, R.E., F.R.S., read a paper "On Gelatine Emulsions."

Mr. WILLIAM BEDFORD read a paper "On a New Instantaneous Shutter."

Mr. F. HENRY exhibited and explained a new arrangement obviating the necessity for hinging the shutter on the dark slide.

Discussions followed, and will be reported when we print the several communications.

Mr. J. TALBOT LANE exhibited and described a new arrangement for vignetting.

The PRESIDENT, in adjourning the meeting until the 11th of March, appealed to the members to bring forward whatever they might have of an interesting character to add to the pleasures of the monthly gathering, as the water-colour drawings now on the walls would then be removed.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on Thursday evening, February 6th, at the Society of Arts, John Street, Adelphi, the President, the Rev. F. F. STATHAM, M.A., in the chair.

The minutes of the last meeting were read by the Secretary, and confirmed.

The following gentlemen were then elected members of the Society:—Messrs. R. W. Statham, W. B. Bolton, W. York, A. L. Henderson, A. H. Chambers, and C. H. Dufaur.

The CHAIRMAN then called upon Mr. Hazard, who read a paper "On Gelatine Plates in the Studio" (see page 80).

At the finish of the paper the Chairman invited discussion.

Mr. P. MAWDSLEY said he fully agreed with all Mr. Hazard had said respecting the extreme sensitiveness and simplicity of development of gelatine plates, and considered they were a great boon to photographers during this dull season of the year. Mr. Hazard's specimens demonstrated the truth of his statements.

Mr. CUTCHEY acknowledged that the plates worked well during the cold weather, but how would the gelatine stand during the hot summer months? He had recently developed a good negative, and, being anxious to test the printing qualities, he had endeavoured to hasten its drying at the fire, but the result had been utter ruin to it. He had found on a previous occasion, when using a gelatine substratum, that the negatives cracked all over when varnished. He had at first attributed this to the employment of an old collodion, but upon changing that without removing the defect, he concluded it arose from the gelatine.

Mr. MAWDSLEY said that he had found the plates work very well if prepared with a good sample of gelatine, taking care to keep everything as cool as possible.

Mr. CUTCHEY said one difficulty was at the present season that the plates were so long in drying.

Mr. FOXLEE remarked that that could easily be overcome to a certain extent by flooding the plates with methylated spirit: they would then be found to dry much more rapidly.

Mr. F. YORK said that while in Paris last year, he had failed with many plates through over-exposing them. He found that out by having to cap the lens before he had given sufficient exposure, as he thought; but on developing it he found that in this instance the exposure was correct, and attributed his failures with the former plates, to developing them all with two thicknesses of ruby glass, and it was not well to get too near that; he also found that gelatine plates retained their sensitiveness in winter, whereas collodion plates were very insensitive, and he could not account for it.

Mr. F. HOWARD thought it better to develop gelatine plates in a white dish than a black one, as recommended by Mr. Hazard, as the detail could be more readily seen.

Mr. KENNETT remarked that it was now five years since gelatine plates had been introduced, and it seemed only at the present moment that photographers in general were aware of their high degree of sensitiveness and their usefulness in dull winter light. He had developed plates with the glass standing at 98° without the least difficulty, taking care to use the water as cold as possible. He cautioned all photographers, when preparing the plates or developing them, to be very particular about the kind of light they worked by, and to use as little as possible, and to thoroughly wash the plate between each operation to obtain brilliant results. If sufficient water was used, the plate would have a matt-like appearance.

Mr. COBB fully endorsed all that had been said about gelatine plates in the studio. It was now three months since he had used the bath, and had been successful with subjects with which at ordinary times, even with good light, he should have failed, and photographers now need not fear dull weather. He thought it very instructive to keep reference of failures when they occurred. He considered that most of the failures were caused by over-exposure.

Mr. F. A. BRIDGE said that he had found no difficulty in developing gelatine plates since he had covered his dark room window with an intense orange yellow paper (it could be had of most of the dealers). He varnished it with varnish which made it bright like tracing-paper.

Mr. HAZARD fully agreed with all that had been said in regard to failures by over-exposure. The time had fully arrived that an instantaneous shutter could be used in the studio with advantage.

Mr. W. WILLIS, jun., then read a paper on "The Platinum Process," and demonstrated it by developing a number of prints, which seemed to give great satisfaction by the rounds of applause which were given.

Mr. A. L. HENDERSON asked whether exposures could be made in the camera to produce a transparency, and, if so, what would be the exposure?

Mr. WILLIS replied that he had not the least doubt but what it could be done. He had not tried it himself, but a gentleman, Mr. Clements, of New York, was present, who, perhaps, could give the desired information.

Mr. CLEMENTS said that he had produced, he should think, five hundred large prints by exposures in the camera; he had given about twenty minutes. He had found the electric light very suitable, as platinum was very sensitive to this kind of artificial light. His size pictures ranged from 17 by 14 up to 70 by 45 inches; he also found they were very suitable for working up either in colour or chalks, more so than any other kind of prints that he knew of. A question was asked whether the cold tone could be overcome.

Mr. WILLIS said that he had been making some experiments in that direction, which he had not yet finished, and had been successful in altering the colour by the use of iridium salt.

A vote of thanks was then given to both the gentlemen for their valuable papers, and the meeting terminated.

Talk in the Studio.

THE ELECTRIC LIGHT.—Mr. Swan delivered an excellent lecture on the electric light, at the Literary and Philosophical Institute, Newcastle-on-Tyne, one night last week, Sir William Armstrong in the chair. After sketching the history and pro-

gress of experiment with electric lighting, be expressed a conviction that gas would not be superseded, but that each mode of illumination would have its specific and valuable use.

MR. F. A. BRIDGE AT THE BRUNSWICK INSTITUTE.—The worthy treasurer of the South London Photographic Society is a favourite in South London in connection with other arts than photography. We find the following in the *South London Press*: "On Monday evening this deservedly-popular entertainer made his fifth appearance at the South-Western Institute, Vauxhall, in his new *monologue de circonstance*, entitled, "Paris Exhibition; or, My Trip with Gaze to Gaze on the Gay City." Mr. Bridge's ability, both as entertainer and vocalist, is so well known that it is almost needless to say the audience heartily applauded the anecdotes, and *bou mots*, and lively musical selections with which the entertainment is plentifully provided. We regret to learn that the energetic chairman of the Institute committee, Mr. Ellingham, has for some time been suffering from severe indisposition, and has been unable to perform his official duties in connection with the Lambeth Union."

STATE AID TO ART.—In the last number of the *Kunst-Chronik* a comparison is made between the art budgets of France and England for the present year, and it is shown that, although the French Government grants aid to a much larger number of art institutions, museums, public buildings, manufactures, &c., the total sum voted for the present year was less by about three million francs than that allowed by England, which only supports the South Kensington Museum, the British Museum, the National Gallery, Portrait Gallery, and the museums of Edinburgh and Dublin. This is noteworthy, for we are apt to think that the State aid granted to art in France is much larger than in England; and so it is, but it certainly, according to these budgets, does not cost so much. The *Kunst-Chronik* proposes to compare also the budgets of other countries, especially Germany and Austria.—*Academy*.

PHOTOGRAPHY OR PHILOSOPHY.—Her Shakespearian education had been neglected, but when she told him, "There are more things in heaven and earth than are dreamt of in your philosophy," she smiled proudly, as one who had said a good thing, and knew it.

To Correspondents.

W. K. J. complains that he cannot succeed with the mounting material described by our correspondent TRYWELL in our pages a short time ago. The dextrine in spirit and water, he says, make a creamy mixture, without any adhesiveness. We think it is probable that he has not applied sufficient heat. Other correspondents who have tried it speak highly of it.

R. JACKMAN.—We think No 1 in your list will suit you best.

LEO.—If you carefully follow out the instructions which have been repeatedly given in our pages for precipitating an old bath with carbonate of soda, and redissolving the carbonate of silver with nitric acid, you will obtain an excellent printing bath on adding water to make the proper strength. For such a purpose recrystallizing is not necessary. The method of proceeding to make a negative bath ought to give you good results.

TRANSFER.—There have been articles in our back volumes and in some of the YEAR-BOOKS containing instructions for transferring collodion films to canvas, but there is no work devoted to that subject. There are full instructions on p. 89 of our YEAR-BOOK for 1870 (which is, however, out of print), and also on p. 421 of our thirteenth volume (September 3rd, 1869). If you have no access to them, we may take occasion to reprint them when we can spare space. 2. Warm tones in collodion transfers are obtained by skill and experience, using a pyro developer, and full exposure with short development. Some operators add chloride to the collodion to obtain this effect. The use of Selle's intensifier also gives a warm tone.

HUGH WALKER.—You do not require any special lens for enlarging. The lens described in a catalogue as intended for a solar camera is probably a condenser, which would not be of any use to you. Your quarter plate lens will answer. With it, and your camera extending forty inches, you can probably enlarge to four times the original size. Do you understand how to proceed about the operation? If not, write again, and we will give you some hints.

NORTHERN NOTES.—The letter signed "The Advertiser," commenting on "Northern Notes" in our last, is inadmissible. If our correspondent wishes to correct any inaccuracy or misstatement in such "Northern Notes," we shall have pleasure in giving publicity to such correction; but we cannot devote our space to the personal criticisms of one correspondent upon the communications of another.

A. CARPENTER.—There are various methods whereby you may decrease the intensity of your negatives. If you give a little longer exposure and less development, you will effect it. If, in applying the developer, you send it over the plate with a sweep, driving part of the free nitrate on the plate away and off the edges of the plate, the negative will be thinner. But the print you enclose is not from a negative which is too intense; it is, on the contrary, just about right in that respect.

J. L. R. (Surgeon-General).—We regret that we are not acquainted with Mr. Willis' address, but will endeavour to ascertain it. So far as we know, he has no agent or commercial representative at present.

W. W.—You slightly misconceive our object in recommending pyro development in some cases. It is not with a view to the production of transparencies as aids to enlargement we have recommended pyro development, but in producing collodion prints for transfer to paper, in which the colour of the image by reflected light is of all importance. In producing transparencies to be used as such, the appearance by transmitted light is of chief importance. And even in producing transparencies as steps in enlargement, pyro development is often valuable as giving an image less granular or crystalline than iron development. The great superiority of iron in developing negatives is chiefly in the rapidity gained by its use, which is not a matter of importance where no sitter is concerned. 3. An alkali is the best solvent for dried albumen.

J. A. A.—A spark from a Leyden jar proved, in an experiment with a specially rapid process, sufficient to give an image of large printed letters; but whether it would be of any value in lighting a subject requiring modelling and detail, we do not know; but think it very doubtful.

R. L. G.—There is little doubt that the sketch was considerably exaggerated, as we suggested.

R. W. DUGDALE.—In using Kennett's dry plates, or those of any other commercial maker, you cannot do better than follow the instructions for developing and all manipulations precisely as they are given in the printed instructions.

B. L. F.—If you are using a collodion which shows a tendency to split on drying, a coating of gum, gelatine, ale, albumen, &c., applied whilst the film is wet, preserves it from splitting in drying. Albumen is the best of these, as being least hygroscopic.

C. E. W.—We are greatly obliged by your suggestion. The subject is one which has been well considered, and the conclusion is that it is not desirable, or possible, with advantage, to put it in operation at present.

D. G. WESTON.—There are various methods of producing slides for the lantern. Your own familiarity with processes will decide which is the best plan for you to adopt. If you work any dry process, use it for producing your transparencies. If you are only familiar with wet collodion, you may produce transparencies by its aid. We have not space in this column to describe in detail any process. You will find many articles in our pages and in our YEAR-BOOKS. On page 76 of the last YEAR-BOOK issued, you will find an interesting article on the subject. 2. The lens will do. A capital manual on the subject, by Mr. Chadwick, was recently published by Werno and Co.

THE LUXOGRAPH CONTROVERSY.—We feel bound to abide by our published intention of inserting no more letters continuing this discussion, although we have received a long letter from Mr. Faulkner, who appears to think that we have taken sides in this inconvenient and uncomfortable dispute. It is our rule to avoid taking sides in the discussions in our pages, and we have taken none, nor expressed in any way, so far as we remember, any opinion of any kind. As we are challenged on the subject, we may say that as regards the Luxograph itself, so far as we have had opportunity of examining it and seeing the work done, our opinion of it is favourable, and we shall have something more to say on the subject shortly. Regarding Mr. Faulkner's ground of offence, the publication of an alleged verbal expression of opinion as a testimonial, either for or against, there cannot, we think, be two opinions as to its impropriety. Publication of remarks made in conversation cannot be defended on any ground of good taste or fairness, and we have no doubt that a thing done in the impulse of business eagerness has been regretted, and an expression of such regret, when the "testimonial" was disclaimed, would have been the best termination of the error. An interesting announcement in Mr. Faulkner's letter is to the effect that he will shortly be able to describe an apparatus for artificial light for portraiture, which may be made very cheaply. He asks if any of our readers can give information as to the best pyrotechnic composition for producing an actinic light.

A. BROTHERS.—Many thanks. We shall have something to say shortly on the subject.

FRANCIS BEATTY.—Many thanks. Attention in an early number. Parcel received. Many thanks.

A. J. JARMAN.—Many thanks.

Several Correspondents in our next.

The Photographic News, February 21, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

GELATINE PLATES IN THE STUDIO—SIGNALS BY SUNSHINE—THE PHOTOGRAPHERS' BENEVOLENT ASSOCIATION AND ITS SUPPORTERS.

Gelatine Plates in the Studio.—It will be some time, doubtless, before dry gelatine plates are generally used in the studio, but from the favourable impression that they have made upon certain prominent photographers who have employed no other medium for months in their work, there can be little doubt about their ultimately taking the place of wet plates, and bringing about the abandonment of the dipping bath. It is this latter which is a constant source of worry to the young and unskilful. Its behaviour ever varies with the weather, while its acidity of temper is known to all. If you cannot rely upon your nitrate of silver, you cannot trust your dipping bath, and a dipping bath out of humour for the morning may destroy your day's work. Old photographers seldom agree in their way of treating their baths. Each acts according to his own experience and judgment. Some let the solution alone, some doctor it. Some believe that sunning and filtration are enough to work upon the most refractory of solutions, while with others the permanganate is an infallible remedy. Not a few do not bother themselves with a curing solution. They throw it down in the residue tub and make a fresh solution, or, if they do much silver printing, employ it in their paper bath. When it is cold the bath acts feebly; when it is hot, we get unequal patches over the plate; when it is neither hot nor cold we are liable to pinholes, fog, and streaks in the direction of the dip. "What causes markings like that in the bath?" beginners will ask you, showing you a stained plate. And by way of reply, you may frankly say, "A hundred and fifty things." There are so many points to be observed, that unless you make up the bath yourself and know all about its condition, you might guess twenty times before you get at the real source of error. You may be a very good judge of the defects and their cause in your own bath, but it is difficult to hit upon it in anybody else's, and for this and other reasons, photographers will not be sorry to part with their old enemy. There will be little regret in our studios if we have to part with the dipping bath; it gave us, perhaps, no extraordinary amount of trouble when we were used to it, we shall say, but it was a matter that required looking after and demanded our constant attention.

Signals by Sunshine.—They have been employing light as a means of signalling in the Khyber Pass, and instead of the electric telegraph, the light signals being flashed from one party to another by means of a heliostat. We believe the distance is but five or six miles between the stations, and the line appears to work with considerable success. Sunlight is requisite for signalling in this way, the sunbeams being caught upon a mirror and reflected in the direction of the station to whom you desire to signal. If heliostats, properly fixed, are employed, there is no difficulty whatever about this mode of signalling, for the sender has only to work the mirror backwards and forwards, and the receiver to count the flashes of light that come towards him. There is nothing new in this mode of signalling; in fact, savage tribes in North America still practise this means of communicating with one another at a distance. But this is the first instance in modern armies of its use. Some years ago the plan was proposed to our War Office over here, but as the sun is a *sine qua non* to its proper working, it is only in tropical climes that the full benefit can be derived. It is said that the ray of light might be made visible fifty or sixty miles away, the beam shooting so high into the heavens; and, moreover, only those placed at the right angles can see and read the signals. In the Khyber, signals are made right up the Pass to Jellalabad, wherever electric communication does not exist; and according to the testimony of Mr.

Archibald Forbes, the energetic special correspondent of the *Daily News*, the heliostats are worked daily. It might seem at first sight difficult to understand how legible signals are capable of transmission in the form of light flashes, but what is known as the Morse code offers a very easy solution. The dot and dash of the electric code, or short and long signal, furnish in combination any letter of the alphabet, and whether you employ flags or shutters, sunlight or a lantern, the transmission of short and long signals is equally feasible; and with these two signals, telegraphers can understand one another. A little while ago, when the United States forces captured a tribe of Indians, they found upon the chief a hand mirror which had been employed for the purpose of transmitting light signals to a distance. In this case the code must be very crude, and, moreover, the signalling of a rather vague character, for unless the mirror is properly swung in relation to the sun and to the angle of reflection—as upon a heliostat, for instance—one can never be sure of transmitting the signals to the proper quarter. As to the intensity of sun-signals, a very good criterion is afforded at sundown, when the beams strike against the windows of a house or other reflecting surface. The light is so intense that the panes of glass look like burning points, and it is impossible to realise sometimes that it is not a fire one is looking at.

The Photographers' Benevolent Association and its Supporters.—The Photographers' Benevolent Association does not get on as it should. There are plenty of applications for relief, it seems, but not many supporters. At any rate, the members should be counted by hundreds by this time, for it is very certain that there is, unfortunately, very good reason for the existence of the Association. In the early days of its existence, help was given to all alike, whether members or non-members, so long as the Committee were assured the case was a deserving one; but now the Association is in working order, it is only fair, of course, that assistance should be reserved to members alone. The working expenses of the Association, small as they are, are just now out of proportion to its funds, for the simple reason that the cost of carrying on a society must always reach a certain amount, whether it be well or ill supported. The Committee at the present moment, with Mr. W. S. Bird as its chairman, is soundly constituted, and the Association, having now been some years in existence, may be credited with having done its work honestly and well. That there is a reason for its existence is proved by the numerous calls made upon its slender resources, and as the terms of subscription are within the compass of even the most modest income, there is no valid reason why it should not be more energetically supported. If such were the case, we feel sure that well-to-do amateurs and others would not be backward in giving donations and subscriptions, and otherwise aiding a deserving association. But one can hardly expect friends and well-wishers to send their guineas unless they see that the affair has the earnest assistance of working photographers and their assistants, for whose benefit the Association exists; and, so far, photographers' assistants have done little to help themselves.

ON SILVER BROMIDE EMULSION IN GELATINE.

BY CAPTAIN ABNEY, R.E., F.R.S.*

DURING the past few weeks I have had occasion to experiment with gelatine emulsion, and I think that perhaps part of my work may be of immediate interest to the Society. I have, therefore, to state one or two facts connected with the preparation of the emulsion itself, and of the plates. Allow me to say that I do not stand here to advocate any particular plates as known in commerce. My own ideas on the subject are that, *if possible*, every photographer, though perhaps not every photgraphist, should prepare his own plates, for when using plates prepared by an unknown formula, he often becomes merely a

* Read before the Photographic Society of Great Britain.

mechanical aid to the manufacturer for exposing the plates and turning out negatives, I will not say pictures. It will be seen that I have referred to photographers and photo-graphists as two distinct orders of workers, and perhaps I ought to give my definition of the terms. By a photographer I mean any one who practises photography for what may be termed art or would-be art purposes. By a photo-graphist, I mean any one who adapts photography to science, and uses it as an aid in research. Amongst many of the former, who have not time to prepare their own plates, there are some few who have true artistic instincts, and to them the boon of ready prepared plates to which they are accustomed is great, and they can give their own impress to the pictures they produce, more particularly with plates prepared by the collodion process, where the development can be modified during its progress at the will of the operator. With gelatine plates they have a far greater difficulty to contend with; the negative must, to a very large extent, be at the mercy of the fluid used as a developing agent, and their whole art has to be concentrated in choosing a good point of view, and in watching for an "effect" when exposing. In some directions for development, we are told to immerse the plate in the developer for so many seconds, when, if the exposure has been rightly timed, the negative will be perfectly developed. It is true that for over-exposed and under-exposed pictures we may have supplementary directions given, but the control exercised by the operator over the image is, to my mind, less than in collodion plates, where you can bring up certain portions of a picture according to your liking. For certain applications, where a purely mechanical picture is required, and where, with the same light and the same exposure, an identically similar negative can always be produced, the gelatine plates are most useful, and it is in this aspect that I give them my heartiest support.

Now to come to the preparation of the emulsion. I find that a greater facility in obtaining density is secured by emulsifying rather more silver bromide in a given quantity of gelatine than is usually recommended. The formula I have employed is as follows:—Gelatine (Nelson's photographic) forty grains. Water sufficient to cover it in a beaker.

The swelled gelatine is drained, and sixty grains of potassium bromide are added to it dissolved in one ounce of water, together with ten grains of potassium nitrate. This is gently heated till the gelatine dissolves, when eighty grains of silver nitrate dissolved in one ounce of water are added in the usual manner. The emulsion may now be kept warm up to 90°—according to Mr. Bennett's plan for any time that may seem best. It may then be filtered, and when cooled to about 80° it is ready for coating a plate. This is done in the usual manner, and the plate is laid upon a levelled shelf to set well. It may then be placed in a dish of water for a few minutes, to get rid of the excess of soluble salts, and then in a second dish for a few minutes more. It is next immersed in a bath of methylated spirits free from resinous matter, and allowed to soak for half-an-hour, after which it is set up to dry in a cupboard. After half-an-hour's draining it may be placed in a hot air oven, and in a quarter of an hour or so it will be ready for use. I prefer, however, to let the plates dry spontaneously, as the gelatine is less liable to frill. By adopting this plan I have been able to make an emulsion at 11 o'clock, and to expose plates prepared with it by 2 o'clock. I believe that this method of preparation is about the most rapid that can be adopted, and certainly the plates are very sensitive. It may pertinently be asked if there is any advantage in using an unwashed emulsion. If plates are required in a hurry, there evidently is an advantage, since the time expended in washing the pellicle is thereby gained. Another point, however, is this: if the emulsion be kept in an unwashed state, it does not readily decom-

pose. When potassium bromide and silver nitrate are used, we have potassium nitrate left in the gelatine; as every one is aware, saltpetre preserves organic matter, hence it protects the gelatine in this case. To quote a case: I made some gelatine emulsion in August last, and left it unwashed through an accident, and I am using it now, and find that it is perfectly sweet, and rather better than it would be if freshly prepared. It was left in an open glass jar all these months, and was not dried up in the least, presumably owing to the affinity that this nitrate has for aqueous vapour. The gelatine emulsion may be washed, if thought desirable, and the plates treated with alcohol; and they are not affected, as far as I can judge, by the soaking with the spirit. In hot weather I have had, of course, no experience with this method, but arguing from analogy, it seems that directly a plate is set, and washed in fresh water, if immersed in alcohol, the danger of the gelatine decomposing is very considerably reduced, and we can therefore hope that one source of annoyance in the preparation of such plates may be overcome.

In developing either by the alkaline or ferrous oxalate developer, I always use a small quantity of soluble bromide. It may cause a necessity for a slightly longer exposure, but by its use there is certainly a gain in clearness.

DESCRIPTION OF A CAMERA SPECIALLY ADAPTED FOR THE PORTRAITURE OF CHILDREN AND ANIMALS.

BY JOHN HARMER.*

Those photographers who are well acquainted with the troubles which arise in photographing children and animals will agree with me that almost the chief and most trying one springs from the necessity of having to verify repeatedly the position and focus of the sitter's image upon the focussing screen before an opportunity for exposing is obtained. It often occurs that when all is ready for the exposure—a dog, perhaps, being the sitter—that the animal fancies he would like to take a little exercise, and starts away for that purpose; then, before he is again persuaded to make himself comfortable, the shutter of the dark slide must be closed, then drawn out of position, and the focussing screen passed into its place. After another arranging and focussing, the slide is again pushed forward and its shutter opened, the operations taking sufficient time for the dog to have a recurrence of his fancy, and make off once more.

Attempts to save the waste of labour, time, and, in many cases, temper, have been made in one or two ways, one of which—perhaps the best known—is to have a small finder of the same focus as the lens in use affixed to the top of the camera, and projecting its image upon a small piece of ground glass. This plan, however, is not of much practical value; the small lens does not cover its plate as the lens proper does; it has also another point of view, a matter of considerable importance in some cases.

The plan which I have embodied in the camera upon the table this evening will allow the dark slide to be put into its place, and its shutter drawn previous to commencing the operations of posing and focussing, there being no necessity to cover up the sensitive plate till these operations have been satisfactorily completed, and its proper exposure given. Besides this advantage, there is that of the point of view being the same; therefore the projection of the image for focussing on the ground glass in one part of the camera, and that which is projected on the sensitive plate, are identical in all respects, the image being directed from one to the other by a simple turn of a handle.

These conveniences are obtained by adding to the ordinary repeating camera a kind of upper story, which is

* Read before the Photographic Society of Great Britain.

partially separated from the lower one by a screen of ground glass; above this is placed a mirror at an angle of 45° or so, to enable the image formed upon the ground glass to be viewed by reflection without having to crane the neck over the camera. This mirror may be placed to face any direction, the aperture in the upper portion of the camera being cut in that side of it which is opposite to the mirror. If the assistance of a magnifier be required, one may be made to slide into this opening, and will, no doubt, be a great convenience, because it can always be retained in its place.

In the camera proper, between the lens and focussing screen, or sensitive plate, is placed a sort of box open at the top, the sides of which, extending from the back towards the lens, slope at an angle of 45° exactly from top to bottom. Upon these sides rest a mirror having suitable fittings to admit of its being moved upwards to the top of the camera, or of being lowered till it rests upon the sloping sides of the box as before mentioned. The lifting action of this must be so arranged that the mirror shall travel a short distance in a straight line before the lower portion sweeps upwards through the angle of 45° , for the space between the back of the camera and lens is so limited that if this be not done the lens will obstruct its motion. Lenses of short focus necessitate very careful adjustment, the mirror having to be of a certain size, and its centre lowered till opposite the axis of the lens, there is nothing to spare.

When the mirror is in its first position—viz., resting on the sloping sides of the box—it stops back all light from the sensitive plate, and reflects it instead at a right angle upon the ground glass above, forming the partition between the upper and lower portions of the camera. When raised, it shuts closely over the ground glass, and allows the light to pass onwards to the prepared plate. To ensure the sharp image on the ground glass being equally sharp on the plate, the distance intervening between the lens and the plate must be exactly equal to the sum total of that from lens to mirror, and from that again to the upper ground glass. Both of these mirrors must reflect from their surfaces, or the sharpness of their reflected images will be somewhat destroyed by the confusion arising from the surface reflections, as is the case when ordinary plate glass silvered on the back is made use of. In some cases it would be more convenient to have the lower mirror placed vertically, its movement being horizontal; the image would then be diverted to a ground glass on the side of the camera, and would not need a mirror to view it. The difficulty of so fitting one would be a little greater; there also would be almost a necessity to work with that side towards the opaque one of the studio.

In the original plan of my instrument, it was my intention to place a small bellows, or india-rubber ball, to be squeezed by a lever acted upon by that which lowers the mirror just as the sensitive plate was entirely screened, then one motion of the handle would serve to lower the mirror and uncover the lens by forcing air into the pneumatic shutter; but through not purchasing this latter accessory till the construction of the instrument was too far advanced for alteration, I found that adequate space had not been provided for to secure a sufficient amount of air pressure for the purpose.

With respect to the fitting up of cameras with the above additions, it appears to me that most rigid repeating cameras at present in use might be readily altered to answer the purpose. Such, as well as all new ones, would be practically of the old form by simply raising the mirror, each one being provided with a focussing screen in the dark slide frame.

The one I have here is perhaps too elaborate for use in the studio, but having been my own mechanic (and an amateur only), except in constructing a portion of the brasswork, you will understand it has been a pet, and will perhaps excuse any errors or defects of fitting that a more

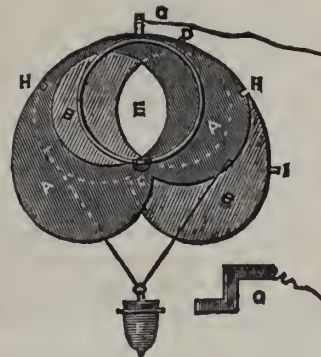
skilled artisan would have avoided. Many points I should be able to improve upon in the construction of another; this, of course, being the first, can only be considered an experimental one. The mirrors in it are of ordinary silvered plate glass; these I have been obliged to make use of for the evening through having been disappointed in not receiving the others in time; they quite serve, however, to illustrate the principle I have adopted.

DUPLEX DROP SHUTTER.

BY W. BEDFORD.*

So many ingenious plans have been devised for giving rapid exposures that I feel that some apology is needed for bringing before you this evening a contrivance of my own, which, however, if not superior in principle to any hitherto introduced, has the merit of simplicity, and I think it will also be found to do its work efficiently.

BACK VIEW.



A A, B B. Two similar metal discs pivoted at C. D. Ring adapter fitted to mount of lens. E. Centre of lens. F. Weight attached by silk cord to each disc. G. Trigger with cord attached, fitting into notches H. When the exposure is completed, the stop at I comes in contact with an overhanging hook, near the trigger, which also serves to keep the discs in contact.

It is essentially constructed of two heart-shaped metal plates revolving on one axis, which is attached to the lower part of the mount of the lens. These two plates, when released by the trigger, have a reciprocal motion imparted to them by means of the weight which hangs suspended from the upper part of each. The apertures in each plate are thus simultaneously brought in front of the lens, and the exposure rapidly effected. You will observe that the exposure commences and terminates at the lower side of the centre of the lens, so that the foreground will get slightly more light than the upper portion of the picture, an advantage which will be readily appreciated by most photographers. It will be seen that the exposure may be easily accelerated by the addition of extra weights. I have not yet had an opportunity of testing its rapidity, but I purpose doing so by photographing a pendulum of suitable length oscillating within a given arc. It will then be only necessary to read off from the resulting negative the number of degrees traversed by the pendulum during the exposure, to arrive, by a simple calculation, at its duration. If any member present can propose any more trustworthy test, I shall be glad to have the advantage of his suggestion.

ON ALBUMENISING PLATES.

BY E. WORMALD.†

An old author says—"When all is summed up, a man never speaks of himself without loss; his accusations of himself are always believed, his praises never." Though the means used by all of us are for one end—good pictures—we may

* Read before the Photographic Society of Great Britain.
† Read before the West Riding of Yorkshire Photographic Society.

still differ greatly in the modes used to obtain them, and I am egotistical enough to prefer my own.

To begin with the foundation of all our work—glass: any sort will do if only flat and clean. I have taken pictures 12 by 10 on common window glass, when no other has been obtainable, which have been enlarged to 26 by 21, specimens of which I now show you. I am now using plates which have had pictures on their surfaces for twenty years, and the few scratches which may be on them are not to be seen in the finished negative. I steep all my glass, new or old, in sulphuric acid and water tolerably strong. I think it leaves the surface of the glass brighter than any other acid. I place them in a flat dish, remaining there till I want to albumenise them. Various mediums have been suggested as a substratum, but above all is albumen. There is nothing like it for the tenacity with which it holds the collodion film on the plate. I have washed my plates, 12 by 10 to 26 by 21, after development, in all sorts of water—stagnant bog water, that from dirty rivers, becks, yellow ponds, even water from coalpits and clayey tunnels, and which has been poured on at varying degrees of pressure, over rocks, mill weirs, from buckets, and even under the water from a hose pipe; in fact, I have washed them in every sort of place where water could be plentifully obtained, and never once have had a blistered film, or a film washed off, for the past sixteen years that I have used this substratum on the plates.

To prepare it: put the albumen of one egg into a twenty or thirty ounce bottle and add to it half an ounce of pure ammonia, '880. Shake it up gently every hour or so, and let it stand over night; in the morning add one pint of water, and shake up gently to make as little froth as possible, when you will find the albumen thoroughly combined with the water. If you allow the albumen and ammonia to remain together for a day or two before adding the water, it will be all the better. This pint of solution will coat one hundred and fifty new 12 by 10 plates. If the plates are old ones, add only ten ounces of water; the albumen being thicker, seems to fill up the scratches.

The water for washing the plates must be perfectly clean. If it flow from a tank it will probably produce gritty spots, as the continual flow of water seems to disturb the sediment at the bottom of the tank, in which case (as has been suggested by some one else) a good plan is to flow a little distilled or filtered water over the plate before pouring on the albumen, which must be applied so as to make the water flow before it and drive off all bubbles.

I once read the remark that the albumenising of plates was a mere plea for laziness. This I deny emphatically, as no amount of cleaning with cloths or leather, spirits of wine, rouge, French chalk, glycerine, oil, or (as been been suggested) even a tallow candle, will produce a plate that will stand the usage some of my plates have to undergo; and I simply use "elbow grease" and patience in rubbing the plates with a clean cotton rag and acid, wash, and albumenize.

You must pardon my being so prosaic about this matter of substratum, which has been so much chased "up hill and down dale." In the face of the new quick dry processes I feel as if I had just come "in at the death;" but it is to me a matter of vital importance in connection with large plates, long exposures, and hot weather.

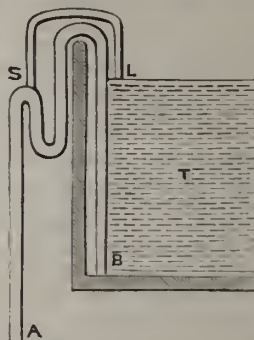
What bad effect it may have on the nitrate bath I know not; but if you set the little ammonia that may possibly get into it against the many other things added to the bath—nitric acid, hydrochloric acid, cyanide, permanganate of carbonate of potash, soda, nitrate of barytes, and now nitrate of lead—I think it can do very little harm. Practically I find none.

Speaking of the bath: I may say that, for outdoor work, I prefer a large-sized, middle-aged bath, which you can rely upon (I care nothing for your new skittish bath whose action is so uncertain), a chestnut-coloured collodion, with a brown developer gentle and slow in its action; then, with a plate well and carefully albumenized, you may be certain of securing a really good negative, which you may wash and fix out of doors and treat in almost any way you like.

NEW AUTOMATIC SYPHON.

BY DR. WILLIAM TAYLOR.*

This is an apparatus designed to serve as an overflow pipe to tanks or other vessels not already fitted with means to that end, and without in any way altering these vessels. It is specially applicable to tanks with a fluctuating supply of water, but in which the water must be maintained at a constant level. As its name implies, it is self-acting, and while at once carrying off any sudden influx of water, it will not bring the level below a certain fixed line. The excess of water is carried from the bottom of the tank. Into the tank, T, is passed the waste-pipe, A B, of a diameter greater than the feed to the tank. This waste-pipe is bent into the



form shown, with the shoulder, S, about half an inch lower than the level of water required in the tank. In the upper surface of this shoulder, at S, a small hole is made, over which a small tube is fixed. This small tube, S L, is then led over the side of the tank to the constant level, L, required.

When this waste-pipe is put into action as a syphon, it rapidly carries off the water to the level, L. When it reaches this, air is admitted by the small pipe through the orifice at L, and the waste-pipe ceases to be a perfect syphon. If, now, a small stream of water flows into the tank, the same quantity passes through the partial syphon, A B; but should a rush of water into the tank take place, bringing the water above the level, L, the waste-pipe is at once converted into a true syphon, and rapidly brings the level back again.

In the sketch, the pipes have been drawn projecting from the sides of the tank, but of course, in practice, these pipes are laid close to the side of the tank.

LIGHT, AND ITS WORK IN ABSORPTION.

BY CAPT. W. DE W. ABNEY, R.E., F.R.S.†

WE can now talk of radiation as light, if we make the proper reservation, and as such I shall henceforth designate it, as it will be more popularly understood.

I have already asked you to imagine that the vibration of a particle (and when I say a particle, I might have said any number of particles) in a star or in the sun can set this medium in motion; but in any hot body, whether distant or near, the same occurs. Thus the particles in these gas flames are causing undulations which reach the eye when it is directed towards them. Let me broadly state that when I talk of particles, I mean very small—almost infinitesimally small—component parts of a body, and it is these particles which are surrounded by the ethereal medium to which they communicate their vibrations. Now, the natural questions to ask are, Are all bodies hot? What are hot bodies? And, Whence do they derive their heat? I may answer the first question by saying that everything terrestrial, at all events, is a hot body; and the second by saying that as long as there are internal vibrations in the body, so long is the body hot when measured by scientific measure. There is a theoretical zero of heat at which all bodies would cease to have any internal movement of their particles, and then it would be

* Exhibited before the Edinburgh Photographic Society.

† Continued from p. 79.

that we could say we had a body perfectly devoid of heat. The lute frost has, perhaps, called to mind that we have been suffering from what we call cold, and at first sight it may seem wrong to say that ice is a hot body. What gives us the sensation of cold? If we place one hand near a piece of ice, we feel that cold, as it is called, is given off. It is simply that we are hotter than the ice, and the vibrating particles of our body set in motion the ether. These vibrations are stopt by the ice, and the energy carried by them is expended in warming it. The atoms of ice are likewise vibrating, but less vigorously than our bodies, consequently we expend more work in warming the ice than the ice does in warming us. If we did not keep up a store of energy in ourselves by eating food, which in its turn causes a renewal of the work expended on the ice, we should gradually become of the same temperature as the ice.

But both the ice and our bodies are warm compared with the absolute zero of temperature, which is some 270° below the freezing point of water; and it is only at that temperature when a body can be said to be without heat—that is, to have no internal motion to communicate to the other. Perhaps this low temperature may exist in space, but we have never felt it, and if it could be brought down to this earth, the aspect of nature would be changed.

The last question, From whence do bodies derive their heat? has yet to be answered. Primarily from the sun, and then from one another. The sun shines, and falls on bodies which may be opaque, such as the earth; or only partially such as the air. The waves of ether are stopped by them, and the result is that their particles are put in motion, or, in other words, they become heated, and they are capable of giving out radiation in precisely the same way as is the sun. The sun, the gas, the table, myself, are all sources of radiation, but, as is self-evident, all are not sources of those peculiar kinds of radiation which cause the sensation of light.

The fact that we can see objects depends upon one of two things: either they must emit radiations which give us the sensation of light, or they must reflect light from some source which emits the same class of radiations. We shall see later how it is that bodies appear coloured when illuminated by white light, that is, when they reflect certain radiations contained in that light.

Recollect, then, that any body whatsoever is in a state of internal commotion of so minute a character that it cannot be perceived by our coarse senses, though its effects are manifest to us. Nothing is at rest on this earth; the whole of the matter of which it is composed is in motion; nature is in a state of unrest.

Then you see that the hotter a body is the more restless it is, and when it becomes very hot, the waves are generated by its particles of such a strength and character that some of them are able to do work, as I have already said, in our eyes, and give us the sensation of vision and colour. Thus in a gas flame we have the particles in a state of active vibration, and in the electric light we have them more active still.

It is with this last source of light that we have to do. On the screen you now see two glowing points. These are, in reality, the images of the ends of two graphite or carbon rods, which have been put in a state of intense molecular vibration by the work executed in them by means of electricity (we shall see further on that this same energy is capable of doing different work), and that they radiate waves in the ether of almost every possible length.

Now, I am not going to enter at all into optics. I must ask those who do not know their principles to take their theory as being capable of rigid proof, whilst the demonstration of their properties will aid them in their belief. In front of this light, which is enclosed in a lantern, I place a lens, and in front of the lens is a slit through which the light collected by the lens passes, and in front of this another lens to collect the rays and focus them on the screen. If I send such a slice of light through a prism, it becomes bent, but bent in a peculiar manner. The whiteness dis-

appears, and we have a band of gorgeous colours appearing on the screen.

Here we have it [spectrum shown], and now I will at once state that the lengths of the energy-carrying waves vary at every minute part of the width of that gorgeous band. When I say length of the wave, I mean the distance between the crest of one wave and that of the next. The waves travel over the same space, however, in a given time, and as the red light has the longest wave length, and the violet the shortest, we come to the conclusion that many more waves of the latter than of the former must strike the eye in a second. But on this I do not wish to linger. I only want you to remember that each part of this lovely variegated band is formed by energy carrying waves of every shade of length varying between 1-40,000th of an inch and about 1-60,000th of an inch, and that these lengths alone cause vision.

It is to radiations within these limits that I wish to confine your attention to-night, though there are radiations which the prism has separated out, which are not visible to us, which lie above the violet, the wave lengths of which may be as short as 1-180,000th of an inch, whilst below the red there are other radiations which certainly have wave lengths as long as 1-20,000th of an inch. I may remark that the radiations from the bodies at ordinary temperatures have these long wave lengths. I will show you that these colours, where mixed, give us the sensation of white light. In this wheel we have seven of the colours into which white light may be roughly divided. On the screen they show in their true brilliancy. I rotate the wheel, and we have a nearly white patch.

(To be continued.)

COPYRIGHT IN PHOTOGRAPHS AND DESIGNS: In Chancery the following case was heard:—

Adams v. Clementson.—The plaintiff in this case was William Adams, of Tunstall, in Staffordshire, a manufacturer of earthenware, and the defendants were Messrs. Clementson Brothers, also manufacturers of earthenware. The action was brought by the plaintiff to restrain the defendants from manufacturing or selling any articles of earthenware having applied thereon the design of the plaintiff, registered on the 17th July, 1878, consisting of the portrait of General Martinez de Campos, Captain-General of Cuba, surrounded by a wreath. It appeared that orders had been received by both the plaintiff and the defendants to supply earthenware plates and other articles for the Cuba market, and they had both been supplied with photographs of General Martinez de Campos, to be copied and used as designs upon the various articles. The plaintiff registered his design as a new and original design under the Copyright in Designs Act, 5 and 6 Vic., cap. 100, sec. 4, and 13 and 14 Vic., cap. 104, sec. 8, and now claimed that the defendants were not justified in infringing his design.

Mr. Higgins, Q.C., and Mr. Herbert Smith, appeared for the plaintiff, and moved for an injunction.

Mr. Glasse, Q.C., Mr. Ashton, Q.C., and Mr. Ingle Joyce, were for the defendants.

The Vice-Chancellor said the question was whether the design of the plaintiff came under the definition of a new and original design within the meaning of the Copyright in Designs Act. His Lordship had no doubt that the defendants only intended to do what they were justified by law in doing. It appeared that the plaintiff had received an order for the supply of a considerable quantity of earthenware, to be sent out to the Cuba market, and he was requested to have the portrait of General Martinez de Campos designed upon the plates and other articles to be manufactured, and for this purpose he was supplied with a photograph of the General. A copy of that photograph was consequently designed and placed upon these articles, and he now asked that the defendants might be restrained from adopting the same design. The defendants, it appeared, had also received an order for earthenware, and had been supplied with another photograph of General Martinez de Campos, which was to be designed upon the articles manufactured. The plaintiff claimed this portrait as a new and original design. It was, no doubt, very important that trade should not be embarrassed by unnecessary restrictions, and if every man who merely copied a well-known portrait and placed that upon the articles he sold, could be restrained by this Court, it would have the effect of paralyzing trade. The plaintiff had taken the photograph and copied it, and so also had the defendants. There was nothing new or original in either design. It was an abuse of the terms of the Act to call this a new and original design, and he should refuse the injunction, with costs.

The Photographic News.

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PHOTOGRAPHY BY ARTIFICIAL LIGHT.

THE average number of hours a day in which good daylight prevails in this country is considerably smaller than even the most rabid stickler for short time in days-works would think of demanding. It is certainly much smaller than meets the convenience of the working photographer or professional portraitist, and there are few, we apprehend, who, when an important customer entered the studio during the declining hours of an autumnal or winter's day, have not earnestly wished that they could turn on some available succedaneum for daylight. The existence of artificial lights of considerable actinic power has been well known; but hitherto the difficulty of securing with such lights the same conditions of equal illumination which characterise daylight have been found insuperable. It is tolerably clear that to secure a satisfactorily pictorial result, and a familiar and effective likeness, the conditions of light and shade must be as nearly accordant as possible with those commonly prevailing, and under which people usually see their friends. Hence illumination proceeding from one intense centre produces shadows unfamiliar in form, and unpleasing and unnatural in blackness. Attempts have been made with magnesium, with electricity, and with pyrotechnic compounds to produce light for portraiture, and to govern or modify them by means of reflectors. But the methods have been troublesome, and the results unsatisfactory; none of these have, therefore, come into practical use.

The first apparently satisfactory method which was brought to a practical issue was Vanderweyde's mode of using the electric light, in which the rays spreading from a point were gathered by means of a huge dioptric lens into a large cylinder of light, giving practically the effect of parallel rays. The machinery was, however, too costly to present any likelihood of coming into general use, and something therefore still remained to be done. The next candidate for the approval of photographers was the method adopted by Messrs. Alder and Clarke, their apparatus being patented under the name of the *Luxograph*. We do not in any degree intend to depreciate the contrivance when we say it appears to be an ingenious combination of previously existing ideas. Thus the light is derived from the burning of a pyrotechnic compound resembling that used twenty years ago by Mr. Moule, and the means of reflecting and diffusing the light produces an effect not unlike that secured in Vanderweyde's mode of using the electric light. A measured quantity of the compound is placed in a burner, which is provided with a flue to carry off the products of combustion. A huge concave reflector throws the light on to the sitter, and its intensity is tempered by passing through a diaphanous screen placed in front, the light being between the reflector and the screen.

The working of the arrangement, so far as we can judge, is very satisfactory. The lighting on the sitter, when we inspected the working, was excellent, giving fine modelling, and entire absence of the hard, abrupt black shadows commonly associated with artificial lighting. The exposure will vary, of course, with the nature of the lighting material employed. Messrs. Alder and Clarke use something in the nature, we believe, of what is known as the Bengal light, used for signal fire, and, if we remember rightly, the exposure was about twenty seconds. Some portraits before us are not inferior to daylight pictures; one of Mr. Glaisher, the President of the Photographic Society, now before us, is an admirable portrait and an excellent photograph.

The subject of Messrs. Alder and Clarke's patent has no relation to the light employed, but to the mode of controlling it; the combination, in fact, of reflectors and screens constitute the *Luxograph*. There remains, therefore, a wide field for investigations and experiments to determine the most efficient and available light, and something may yet be done in trying modes of applying artificial light. Hitherto the artificial light has always been introduced into the studio, or into the apartment where the sitter was placed, and the fumes emitted by many of the burning materials employed have been a source of constant trouble. Burning magnesium, for instance, emits an exceedingly actinic light, and, directed and controlled by an arrangement like the *Luxograph*, would probably be found very efficient; but the dense fumes produced by its combustion have been sufficiently troublesome to be almost prohibitive as to its use. The fumes ensuing from many of the pyrotechnic compounds, some of which contain arsenic, are more offensive and dangerous still. The question very naturally arises, then, as to whether the introduction of the burning materials into the studio is necessary. The photographer's studio is generally built so that the light falling through a given space of the window shall duly illumine the sitter. Is it necessary to give up this facility in using artificial light? If the light—say a pyrotechnic compound—be fired outside the studio, opposite the window, duly arranged to light the sitter, an effect of lighting closely resembling daylight illumination might be obtained, whilst all noxious fumes might be confined to the open air, whence they would be quickly dissipated. A due arrangement of reflectors behind the light, and of diaphanous screens in front, might be used, or the window of the studio might be covered with thin semi-transparent blinds to soften the intensity of the light. It would be well, in making experiments of the kind, to select a private neighbourhood, or an alarm of fire might easily put an abrupt termination to experiments.

The selection of the most convenient, efficient, and safe means of securing an actinic artificial light is a matter of considerable importance which has not hitherto received much systematic attention and investigation. New lights have been announced from time to time, and some investigations have been made, but the absence of efficient means of applying such lights to portraiture has prevented general and systematic research. The chief sources of artificial light are found in the combustion of certain metals and metallic salts. It has been alleged, indeed, that the source of solar light is due to the intense combustion of certain metals, such as chromium, magnesium, and titanium, at the sun's surface. The Bengal light is obtained, for instance, by igniting sulphide of arsenic and antimony, or nitre. A very intense and actinic light is obtained by the spontaneous combustion of phosphorus in oxygen. A very actinic light is obtained by the combustion of sulphur in saltpetre heated until it melts. The usual method of obtaining this light, by first melting nitrate of potash in a crucible or mortar, and then throwing in pieces of sulphur, is not unattended by danger in inexperienced hands. But if the powdered nitre, quite dry, be placed in a suitable vessel, and then press into the

surface of the powdered salt a piece of phosphorus, and ignite it, the heat will melt the nitre, which will evolve oxygen sufficient to combine with the phosphorus, and produce a very intense white light. This is, practically, a combination of the phosphorus in oxygen method with the sulphur in nitre process, as efficient as either, and more simple. It is not improbable that the oxy-hydrogen light with an arrangement for connecting the diverging rays into parallel rays might be found to answer. To give the oxy-hydrogen light a bluer and more actinic quality, M. Carey Lea has recommended soaking the lime cylinders in a saturated solution of sulphate of copper.

We may conclude by restating the comparative actinic values of some artificial lights as estimated by Messrs. Riche and Baily, who some time ago undertook an investigation. In these experiments, the oxy-hydrogen light stood lowest, and is numbered as 1. Thus—

Oxy-hydrogen light	...	...	...	1
Drummond light	...	...	...	3
Zinc burnt in oxygen	...	...	...	3
Magnesium	...	...	...	5
Current of binoxide of nitrogen in a flask containing bisulphide of carbon	...	...	...	6
Jet of binoxide of nitrogen upon a vessel containing bisulphide of carbon	...	...	...	6
Jet of oxygen upon a vessel containing bisulphide of carbon	...	...	...	7
Jet of oxygen upon a vessel containing sulphur	...	...	...	8

THE "MONITEUR DE LA PHOTOGRAPHIE" AND ERNEST LACAN.

THE last number of our contemporary, the *Moniteur de la Photographie*, contains a notice that, pending arrangements which await completion, M. Leon Vidal will superintend the editing of its columns. The new number opens with an eulogy by M. Vidal on the late proprietor and editor of that journal, M. Ernest Lacan, our own valued and lamented contributor, which we translate for the benefit of our English-speaking readers.

"With the profoundest grief and feeling of sorrow, we announce to our subscribers and readers the death of the eminent founder of this journal, which he conducted with so much perseverance and acknowledged talent. Ernest Lacan is no more. He succumbed suddenly and unexpectedly to a second attack of the same complaint that during the course of last summer already placed his life in danger. On that occasion, thanks to skilful advice and to tender and unwearied care, he was able to resume almost unchanged his ordinary course of life—a life devoted to his relations, his numerous friends, and to the science that he loved so well.

"It seemed as if he would still be able to do much for that science, and rejoiced at the ever growing success of his work, to which he had given eighteen years of his life. He expressed in this journal, only a few weeks ago, his pleasure at having been able, thanks to the numerous visitors to the International Exhibition, to reorganize the strength of the bonds that the *Moniteur de la Photographie* had created between his friendly readers and himself. And then he went on, as if oppressed with a presentiment of the fate that has snatched him from us: 'We have always been of opinion that the aim of the editor of a journal like this is to instruct its readers, to give them information on every point which bears on the practice of their art, and to collect with care and diligence, but without partiality, all the facts which can possibly be of interest for the same purpose. The success that we have attained is a proof of the correctness of our judgment in adopting and faithfully adhering to this programme, and we shall be careful not to make any change in it.'

"It remains only now for us, his devoted fellow-workers,

to pursue the line of conduct which this best of friends had traced for himself. We must all endeavour to remember the gratitude that we owe to one who was always eager to sustain and encourage our faltering steps in the path of discovery and invention; and this gratitude must not be limited to regrets, however sincere they may be. We have before us the task of watching over his labours, and of preventing them from being forgotten. It must be our part to take care that his name should receive the tribute of remembrance and praise of which it is so worthy; to see that it be inscribed in the historical roll of scientific progress with which it has been associated for more than five and twenty years.

"Such is the duty of us who are left to mourn his loss. Let us fulfil it with the same ardent faith in the brilliant future of the photographic art that he always professed; let us continue to record here, and even to exalt, every success of his beloved science, and we shall thus not only be faithful to his revered memory, but shall also, if such be possible, help to assuage the grief and wipe away the tears of the loving and brave companion of his life—of one who, not content with surrounding him with every care and affection, made herself his assiduous fellow-labourer in his scientific work."

FRENCH CORRESPONDENCE.

DEATH OF M. ERNEST LACAN—PHOTOGRAPHIC UNION OF FRANCE—PHOTOGRAPHY BY THE ELECTRIC LIGHT ON THE SYSTEM OF VANDERWEYDE—PROCESS OF PHOTOGRAPHING IN COLOURS—PHOTOGRAPHIC LITERATURE.

Death of M. Ernest Lacan.—During the last month the photographic world has been at the same time startled and pained by the news of what may be called the sudden death of M. Ernest Lacan, caused by a second attack of an illness of which he appeared to be cured. The life of our lamented colleague was devoted to the promotion of several branches of applied science, and photography more especially occupied a large and prominent place in the catalogue of his researches. Eighteen years ago (in 1861) M. Lacan started his own paper, the *Moniteur de la Photographie*, and although he worked assiduously on the staff of several other journals published by the *Société des Publications Périodiques*, it was to the first named that he directed all his care and enterprise. During this period he was thus completely associated with the progress of photography—that inexhaustible science which produces every day a fresh surprise in the way of novel discovery or further application. In his capacity of correspondent of the PHOTOGRAPHIC NEWS he had for a long time given most commendable proofs of his acquirements; in the place which he occupied up to a few days ago, I venture, with feelings of profound grief for his loss, to offer a humble testimony of respect and esteem to his memory. Ernest Lacan was not merely an enlightened and indefatigable worker, whose death has left a void difficult to fill; he was also in private life an amiable and kind-hearted man, who was always ready to render a service, and had the faculty of attaching to himself a number of sincere and sympathizing friends. In its last number the *Univers Illustré* publishes a portrait of our late respected friend, whose place I have taken as Correspondent of the PHOTOGRAPHIC NEWS, but with the well-grounded fear that I shall never be able to replace him.

Photographic Union of France.—Nothing is in closer relation with death than life; and there is in effect a new life stirring latterly in the photographic world here. In the PHOTOGRAPHIC NEWS of the 27th of December last, the proposed formation of a new association was mentioned, and this association has now been definitely established under the name of the *Union Photographique de France*. The statutes of the Association have been drawn up and circulated among all the professional and amateur photographers, with an earnest appeal to them not only themselves to become members of the Union, but also to

induce their friends to co-operate efficiently, cordially, and loyally in promoting the numerous and important interests of the photographic art in France. These are the actual words of the circular issued by the directors of the Association, and they add that in drawing up the statutes they have been at great pains to work according to the principles of good fellowship, in order to avoid all spirit of cliquesism, and to satisfy the real wants of the profession. The executive council of the Photographic Union consists of the following members:—M. H. Collard, president; M. Bacard, jun., vice-president; M. Liebert, treasurer; M. K. Versnaeyen, secretary; together with MM. E. Carjat, Delie, and Gougenheim. In the new society elementary courses of instruction in chemistry and technical drawing will be organised; it is also proposed to start a special journal, but until that proposition is carried into effect, the *Revue Photographique* will provisionally be looked upon as the official organ of the Association.

The Electric Light in Photography.—Many photographers are at present losing their heads over the use of the electric light in their art; every one, more or less, is either employing it or studying it. M. Liebert has acquired in France and Belgium the sole patent rights of the system of Vander Weyde, of London, and, with the practical sagacity of a thorough man of business, he has advertised his new arrangements with much liberality and skill. First he invited all the correspondents of the press to witness his introductory experiments, and then he secured the attendance of a group of visitors of distinction; among others, portraits taken by night of H.M. the ex-Queen of Spain; of General Grant, the late President of the United States; of General Noyes, the American Ambassador in Paris, are exhibited by the side of those of a number of Parisian celebrities in many a grand show-case along the boulevards and the principal streets. In addition to his, last Tuesday M. Liebert gave a large soirée to which more than 800 persons—all of the upper ten—were invited. To dazzle all these people, portraits were actually taken by the electric light; and, in the midst of music and dancing, the general topic of conversation was this new process, which the youngest child of M. Liebert—a boy of three years old—calls “le soleil de papa.” In addition a *Ronde diabolique* was sung with chorus and orchestral accompaniments entitled “Photography and Electricity.” All this is the amusing side of the question; but if it be true that the sun has found a powerful rival in the electric light, and that the latter only wants to be thoroughly worked out, it is not less true that photographs cannot always be taken at the height of a popular fête. It is not, therefore, surprising that M. Liebert prefers to work in the calm of his own studio. We have seen him operating under these conditions, and can testify that the results he obtains are excellent. The light is transmitted from the electrical apparatus by double reflection by means of a disc which projects it on a large elliptical reflector, where the rays are concentrated, and thence diffused into space. It is this arrangement which gives the light the same quality as that of daylight, inasmuch as it does not illuminate the object directly. There are consequently no hard outlines, no exaggerated shadows, no offensive and false inversions, as in the old system with direct illumination. The light is produced by an electro-dynamic machine of Gramme, with an illuminating power of 500 Carcel gas jets; this is set in motion at the rate of 500 revolutions per minute by a gas engine of four-horse power. The effect produced is very much like that of the light of the sun after traversing a white mist, and this, as is well known, is very actinic. The fuss made about the electric light will be the cause of many disappointments. Already several photographers, both in Paris and the provinces, are rivalling each other in advertising their experiments, only they forget to mention that they work on the old methods. They have, therefore, merely a cart without a horse, and are like the ape in the story who

tried to show some pictures with a magic lantern, but forgot to light the lamp. The electric light alone, no more than the light of the sun, is not sufficient to produce good portraits; it requires, besides, considerable skill and good apparatus. By this I do not mean to say that all electric-light photographers are antagonists to progress, and only work the light by the old methods. On the contrary, M. Lumière (a most appropriate name), of Lyons, has also adopted the Vander Weyde system, and the firm of Ghémar, in Brussels, states its intention of immediately following his example. Courage, photographers! You will soon have no cause to be afraid of bad weather.

Photographing in Colours.—Another triumph for photography is signalised in the invention of M. Germeuil-Bonnaud, of Paris. The English public who read *Truth* are probably not able to understand entirely the meaning of the following paragraph, which appeared in No. 103 of that journal of the 23rd January last:—“I have been shown a very marvellous specimen of a coloured photograph. The inventor is a Freuchman. The photographs are not taken directly in colours, but they are not coloured behind, and when the process is introduced in London, as the photographs are hardly dearer than those now sold, it will, I think, revolutionize photography.” This relates to the invention of M. Germeuil-Bonnaud, the ingenious discoverer to whom we owe so many improvements in the process of photographing on porcelain, and who has now succeeded in obtaining the direct action of photography on different colours. All that he has done is to sensitize the neutral colours, and to render them insoluble. The coloured proof leaves the bath ready to be delivered to the public, and the supplementary operations of mounting and enamelling do not cause the slightest injury. The advantage of the process is manifest: first of all, there is no question of a gelatine film covering a plate of colour, or of some medium, by transparency; the colours and the photograph form one and the same body. As regards cost, the prints in colours are not much dearer than ordinary photographic prints. This is not, it must be confessed, a process for taking the natural colours direct by photography; but, *en attendant* that they can be taken as they appear in the camera, the process of M. Germeuil-Bonnaud is an immense stride in advance for colour photography. There is no need for the hand of a skilful artist to apply these colours—which may be in water-colour or any other medium—on the photographic prints; a child can now lay them on before printing, and it is only necessary to have a good negative to obtain a beautifully coloured picture, whether of a portrait or landscape, an object of art, or any other reproduction. More especially for art objects, the invention of M. Germeuil-Bonnaud will be found to meet a great want.

Photographic Literature.—In the field of photographic bibliography several new publications have been welcomed with eagerness. Among them are the third and enlarged edition of M. Liebert's *Photographie en Amérique*; the excellent YEAR-BOOK of Mr. Wharton Simpson, of London, as useful as it is interesting; and the catalogue of M. J. Audouin, of Paris, which contains not only a price current of every photographic requisite, but also much good advice, and many excellent hints. This catalogue possesses also an interest of its own, inasmuch as it makes known to the public several entirely new processes.

Correspondence.

OXALATES IN PHOTOGRAPHY.

SIR,—I read with pleasure a letter in your last signed “A Looker-on,” who is kind enough to remind me of a letter of mine published in the *Photographic News*, some time ago, after a note by Sir John Herschel in the same

journal. I confess I had entirely forgotten it. Nevertheless, it shall, with your permission, be the opportunity for stating that I have great faith in the future of oxalic acid, or oxalates, as applied to photographic processes; hence I was pleased to see reference made by several of your correspondents lately to my first experiments in this direction. Still this experiment of mine was only a rude attempt to imitate silver prints and to substitute iron for silver. It might, perhaps, be worked out into a thoroughly artistic process; but I rather fancy Mr. Willis has struck upon the right track—as far as delicacy is concerned, more especially—and I should not be surprised to see some modification of his process prove successful in emulsions. Some compound oxalic ethers, either combined or mixed, with certain compounds of iron, might find their way into collodions, &c., more readily than the chloride or bromide of silver mixtures now in use.—I am, yours, &c.,

London, Feb. 14th.

T. L. PHIPSON, Ph.D., F.C.S.

PYROTECHNIC COMPOUND.

SIR,—I think the undermentioned will answer all the requirements of an actinic compound as requested by Mr. Faulkner, having used it twenty years ago successfully for map and plan copying. I should say, with a rapid lens and sensitive bath, eight to ten seconds should suffice.

Black sulphide of antimony	...	12 parts
Sulphur	...	42 "
Nitrate of potash, by weight	...	112 "

Well dried and pulverised separately, then passed together through a hair sieve.

I shall be happy to give any further information required.
SCOTIA.

PORTRAITURE BY ARTIFICIAL LIGHT FOR AMATEURS.

DEAR SIR,—May I ask the Rev. H. J. Palmer, through the medium of your columns, to explain more definitely the means whereby he gets rid of the "smoke nuisance" in the lamp he suggests. To me, a professional (and professionals, perhaps, may be allowed to take an interest in these matters equally with amateurs), the method does not appear sufficiently lucid; and possibly I may not be the only one who cannot "see it." The idea seems an ingenious and likely one, and, as a matter of experiment, I should like to carry it out as accurately as possible.

While on this subject of artificial lighting as applied to photographic portraiture, I would remark that I, for one, shall never be in favour of its application for establishing *night business*. I think photographers, as a rule, have enough to do and to contend with in their *daily* struggles, without seeking to shorten their frail lives still further by running after this "ignis fatuus," and finally making it their ideal and their god, which very many would do if once they began the "pursuit" of such "pleasure?" The result of this can be no *real gain* in the long run, as photographers are very like sheep in these matters—if one starts all will doubtless follow, to their bodily if not spiritual ruin. But I trust it may not be so, and that we shall have none of it. Surely photographers, above all others, need an amount of recreation and rest after their peculiarly harassing and fatiguing *daily* labours, without establishing a "night season" to finish them off entirely.

Artificial light for use on dark days, and occasionally at night for anything "special," also for printing, copying, and enlarging during the present *usual hours*, will, without doubt, prove exceedingly useful, and be a great acquisition to the professional photographer; but, on the other hand, if its powers and uses are to be abused after the manner I have set forth, placing us on a level with third-rate shopkeepers and "restaurant" proprietors, I should deeply deplore and strongly denounce its introduction. For my own part I should feel inclined to resign the profession at once, and

start in some other line altogether. As for assistants, I am sure they'd "stride" in a similar direction without stopping to think.—Yours truly,

Iludersfield, February 18th.

VINCENT HATCH.

A PRELUMINERY NOOTIZ.

MISTER HEDITER,—Praps you woant mind my interdueen myself tu yow wooth a few thouts wot i hev bin a thinkin lately, my pore owl fayther use to sah tu me boi sez he "you mark my wurd thez more munney got by skamin then there iver waz by hud work ain ime blowed if i doant think as how he wroht fur out; ye noo i hev been a watchin things a bit lateley, an i fare tu think i hev larnt how tu du it, anyhow i mene tu hev a slap at it thow i am a gettin as masah inter the arternoon. i thout i wud jist rite an tell you about it beez you mite like tu go snax wi me, i spooz you noo wot that mene doant ye, if nut ull jist tell ye, it mene tu shere an shere alike doant ye see, an praps it wud be as well if we had 2 or three more in it as tha sah doon here "the moor the murrier," so if you can spot 2 or three sharp sort o' ehaps jest you horl em in wool ye, or if you think we ortent tu du that till arter we begin bizness du so i arut at orl petickellar, i hev bin a thinkin we shull hev tu hev a rume sum wheres in lunden leastways you wud korl it a norfis i spooz; but i shall get use tu yer lunden ways when i eum up and sune be like a pare o' wellurton botes with plenty o' da an martiu on 'em; ower slister doou here have got a gret bit o' brass nailid on tu his door with his name writ on it, we mite hev owe like that and hev theze ere 3 names on it, Mussers Trapein, Catchem, an Skinem taste-o-money-all-aygents. there now you see my little game doant ye an wot du you think out? tiz the sound o' the munney wot'll track artenshun, but this you noo is ony a gieneral sort o' outline and i karntell you eny more now becz ime bizzy a makin a new paytent masheen tu put into the bizness so as to make a bigger consarn on it. an that i rekkon wool be the larst bit o' hud wurk i shill hev to du for thatll bring in a forthein for the lot on us but ull tell you more about it next Satteday.—Yors truly,

BILLY NUT.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

WE supplement our report published last week of the annual meeting of this Society by fuller details from the official journal of the Society.

After the routine proceedings of opening the meeting, the following honorary members were unanimously elected on the recommendation of the council:—Dr. W. H. Draper, the University, New York, and Dr. H. Vogel, the Industrial Museum, Berlin.

The Hon. SECRETARY then read the Report (in our next).

Captain ABNEY moved the adoption of the Report, which had received the careful consideration of the Council.

Mr. MAWDSLEY seconded the motion, which having been carried, a vote of thanks was unanimously passed to Lieutenant Darwin, R.E., the Honorary Secretary.

Mr. J. SPILLER (Treasurer) read the balance sheet, regarding which he observed that the sum total of it appeared to be that the Society had been living up to or even a little above its means. At the same time it must be taken into consideration by the members that they were occupying magnificent premises with the effect of bringing them a large increase in their numbers. There was a long list of new members, but these would not appear in the balance sheet until next year, when a much more favourable aspect would be presented. The amount for gas represented the consumption for two years, as some delay had occurred owing to the difficulty at arriving at an equitable agreement with the proprietors of the room. He might remark, with regard to the assets, that it was the opinion of the auditors that they were of a higher value than last year. This was owing to the diligence of the Council in scrutinizing the list of arrears, with the result that the outstanding debts had been considerably reduced. The amount standing under the head of subscriptions

also compared favourably with other years. The arrears had been looked up, and the total paid in was now £252 as compared with £223 in 1877, and £211 in 1876. He might also say that though the expenses connected with the *Journal* might seem high, this was due to several items which might properly be charged in the "general expenses."

The PRESIDENT, in moving that the balance sheet be adopted, said he thought it presented the affairs of the Society in by no means an unfavourable light.

Captain ABNEY seconded the adoption of the balance sheet. In moving a vote of thanks to Mr. Spiller, Captain Abney referred to the trouble that gentleman had taken with respect to his duties as Treasurer.

Mr. SEBASTIAN DAVIS, in seconding the motion, observed that he knew from experience the exertions required in connection with the office, and was quite sure that no one had discharged that office more efficiently than had Mr. Spiller.

A vote of thanks having been passed to the Auditors, The PRESIDENT observed that in future it was hoped that the decision with respect to the Progress Medal would be made known at the Annual Meeting. At present the Council was engaged in considering the award, and the decision would be shortly announced; and this was also the case in regard to the Paget Prize Medal. The Presentation Picture was in a very forward state, and in the course of the next ten days, if it met with the approval of the Council, it would be circulated among the members.

Colonel STUART WORTLEY then moved a vote of thanks to the President. Mr. Glaisher gave an immense amount of time and trouble to the Society's business, and he was quite sure that without his guidance the members would feel at sea. The President took care that no mistakes were made, while the prestige that was attached to the Society from its association with his honoured name could hardly be overrated.

Mr. W. BEDFORD having seconded the motion,

Mr. SPILLER put the vote to the meeting, and it was carried with acclamation.

The PRESIDENT, in reply, said he thanked the members as warmly as they had thanked him. He could assure them that no effort would be wanting on his part to advance the interests of the Society. He might say that he was now one of the oldest members of the Society, and had been associated with its fortunes both at King's College and at Conduit Street, and his list of attendances was, at all events, a guarantee of the interest he took in its welfare.

Mr. J. HARMER, of Arundel, then exhibited a new camera, by which repeated focussings could be made without the necessity of withdrawing the dark slide. Mr. Harmer read a paper on the subject (see page 86.)

Mr. YORK, as one who had had much experience in photographing animals, thought there were two objections to Mr. Harmer's camera. One was the noise made in moving the mirror. This he considered would be enough to frighten any animal. The other objection was the cap placed in front of the lens. Otherwise the arrangement was a very efficient one.

Mr. HARMER said the noise was due to his bad workmanship. If the camera was made by a professional workman, he did not think there would be any noise. With regard to the cap, it was the ordinary method of uncovering the lens, and he had not attempted any alteration in that respect.

After a vote of thanks had been passed to Mr. Harmer,

Captain ABNEY read a paper "On Silver Bromide Emulsion in Gelatins" (see page 88).

Mr. JOHN TALBOT LANE exhibited a printing-frame, which had attached to it an ingenious contrivance for vignetting.

Mr. W. BEDFORD then showed a new instantaneous shutter, and read some observations respecting it (see page 87).

Mr. HENRY then showed a camera in which the front board could be entirely removed from the dark slide, thus doing away with the annoyances arising from the use of a hinge. Mr. Henry's invention consisted of a strip of wood which was pressed against the shutter by means of a spring, and when the shutter was removed pressed against the frame of the dark slide, effectually preventing the admission of light.

The PRESIDENT, in closing the meeting, said, he had one favour to ask the members. The pictures which now adorned the walls would be removed before the next meeting, and he hoped the members would do all they could to supply their place with photographs, the larger the better. When the meetings were held at King's College photographs were always shown, and were productive of much useful and interesting conversation. Contributions of any kind will be greatly welcomed.

The meeting was then adjourned till the 11th of March.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE fourth ordinary meeting of this Society was held in 5, St. Andrew Square, on Wednesday evening, the 5th inst., JOHN LESSELS, Esq., President, in the chair.

Before commencing the business on the billet,

The CHAIRMAN begged to express his regret at the loss which the Society had sustained by the death of one of its members; he referred to Mr. Dallas, who had been connected with the Society for about ten years, and who during that time had taken considerable interest in the various operations. As a private friend, and brother elder in the same church, he had found him a warm-hearted man, and one it was always a pleasure to meet and have dealings with. His ability as a photographer was well-known. He had specially devoted his attention to the permanent processes for book illustration, and, being a teacher in the School of Design, it was not surprising that he had made the art capacities of photography his peculiar study. Mr. Lessels then moved that the Society send a message of sympathy to the widow and family of the deceased.

Mr. W. H. DAVIES seconded the motion, and in doing so referred to the late member as a dearly beloved friend, and as a man whom no man could know without loving.

The SECRETARY was then instructed to record the motion in the minutes, and send an extract to the widow.

Fourteen new members were then proposed, and unanimously admitted, viz.:—Messrs. Robert Wight, Councillor Doig, Aitken Dott, Robert Buist, William Downes, George Walters, Robert Denson, William McGregor, E. J. Craig-Christie, Rev. R. F. Colvin, Robert Hamilton, John R. Aucrum, John G. Wood, and W. T. Sutherland.

Dr. WILLIAM TAYLOR exhibited and described a new "Automatic Syphon," devised and constructed by himself. Dr. Taylor gave an amusing account of the cause of its origin. In his dining room he had a large slate-bottomed aquarium, which, from its position and construction, would not allow of the usual overflow passing through the bottom; and, in consequence of the irregular supply of water, it sometimes happened that the room was flooded, and various aquatic animals were discovered floundering on the carpet or tumbling down the stairs. This called forth a mild suggestion that it would be advisable to adopt some effective means to prevent the occurrence of such a mishap, and, making use of the blackboard, Dr. Taylor illustrated the various experiments tried, until, from the use of cranks and pulleys, the apparatus had culminated in the simplest of devices, which perfectly served its purpose. The practical working of the syphon gave great satisfaction to the members present.

The PRESIDENT expressed himself highly gratified with the invention, and was surprised that from its extreme simplicity it had not been thought of before.

Mr. W. T. BASHFORD said that he had seen the apparatus elsewhere, and was so impressed by its ingenuity, simplicity, and probable usefulness to the photographer, that he had asked Dr. Taylor to submit it to the Society. This Dr. Taylor at once most courteously consented to do. He had no doubt that many uses might be found for it.

Mr. LAURIE said that if he had possessed such an apparatus five years ago, it would have saved him much annoyance and expense; he greatly admired the thoroughly effective way in which it did what was required.

Mr. PRINGLE thought the ingenuity displayed most commendable, and that while it could not take the place of such an effective apparatus as a Moulton's washer, it would, nevertheless, be of inestimable service in many operations.

Mr. CRAIG-CHRISTIE, knowing the requirements in chemical manipulations, considered the apparatus invaluable; many people would have patented it, and by making the syphon public property Dr. Taylor had acted most liberally.

Mr. W. H. DAVIES considered that the admirable way in which Dr. Taylor had overcome the difficulties which led to this invention was worthy of all praise.

A cordial vote of thanks was passed to Dr. Taylor for his kindness in bringing the matter before the Society.

Mr. H. H. PILLANS referred to a communication which he had received from the Editor of the *St. Louis Practical Photographer*, and laid on the table a number of that journal, together with several examples of American portrait work as a supplement to an article therein, which had been sent to the Society by the Editor. The photographs were much admired.

Mr. W. H. DAVIES then proceeded to read a paper entitled "The Spirit of the Journals." He explained that owing to the

pressing claims on his time, he had been unable to give that attention to the subject that he would have wished, and further, he thought that such papers were rendered almost unnecessary, seeing that everything of value was recorded in the Almanacs, which were becoming more and more popular every year. Referring to Mr. J. T. Taylor, he said that to that gentleman was due in a large measure the credit of instituting the Edinburgh Photographic Society, and it was no less owing to his energy combined with Mr. Warwick (the present Town Clerk of Glasgow) that the Society had attained its well-earned success. He (Mr. Davies) was sure Mr. Taylor carried along with him to his new sphere of labour the best wishes of the members.

Mr. Davies' paper called forth a good deal of discussion, in which Messrs. Lessels, Annan, Mathison, Turnbull, Craig-Christie, and Dr. Thomson, R.N., took part.

In the matter of heating the dark room Mr. Mathison said that in his experience with gelatine plates he had found the ordinary gas stove work satisfactory. Mr. Lessels considered a current of warm air more preferable. Dr. Taylor stated, from experience gained during the last severe winter, that he felt nothing could equal the spirit lamp for keeping up an uniform heat combined with purity of atmosphere. He recommended this in preference to every other method. Of course experience would determine the size of the lamp, or how many should be used to secure the desired temperature.

The following items were found in the "Question Box."

1. "What is the best dry process for an amateur to work who is going abroad?"

Mr. TURNBULL recommended the collodio-bromide process as being by far the most simple and certain.

The PRESIDENT considered Mr. Turnbull's own "Waverly Plates" to be the best that could be used. He could not conceive of anything more simple to manipulate, or more certain in results; and his experience had extended over all the well-known dry processes.

2. "Can any member give a simple formula for photographing on wood blocks for engraving?"

The Questioner was referred to a paper on this subject read before the Society some years ago by Mr. Alexander Nicol, and in which the whole process was clearly explained.

On a vote of thanks being given to the Chairman the meeting adjourned.

WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

The ordinary meeting of this Society was held at Bradford on the 3rd inst., Mr. JOHN HOWARTH in the chair.

After the minutes of the preceding meeting had been confirmed,

Mr. E. WORMALD read a paper "On Albumenizing Plates" (see page 87).

In reply to Mr. A. Sachs, as to the reason of Mr. Wormald's using such a large quantity of ammonia,

Mr. WORMALD said he considered that it acted as a solvent of the albumen, and gave, on the addition of the water, a solution of very uniform density, and very easy to work with. He further stated that he had frequently tested his bath, and had not found any symptoms of alkalinity. He had used baths for a very long time, and had not found any sensible depreciation. His baths were not very acid to commence with.

Mr. MORI said he had been informed by a friend that he found when he exceeded six drachms his bath soon got out of order and became alkaline. He could work a bath three times as long with a small quantity of ammonia in the albumen as he could if he exceeded the maximum six drachms. He (Mr. Mori) went on to say that if Mr. Wormald used an old ripe collodion it would contain a quantity of free iodine, and have a similar effect upon the bath as acidifying it, so far as neutralizing the effect of the ammonia went.

Mr. SACHS said he frequently used his albumen without the addition of ammonia. His opinion was that the use of ammonia was simply to confer keeping qualities upon the albuminous solution.

Mr. MORI remarked that age produced the same effect upon albumen as did the addition of ammonia. Fresh albumen could not well be used. It required keeping three or four days, until a slight decomposition had set up; then fresh albumen was added, when it would work well and coat the paper evenly.

Mr. E. PASSINGHAM said that he used six grains of the dried albumen to twenty ounces of water.

In reply to a question by Mr. John Smith,

Mr. WORMALD said he did not particularly attribute the cleanliness of his plates to the albumenizing, but he did claim for it certain cleanliness and a great tenacity in holding the film on the plate.

The thanks of the meeting were then passed to Mr. Wormald for his paper.

Mr. W. T. BURROW asked if any emulsion worker present had had any difficulty in keeping the film on the plates when previously albumenized. He had tried both old and new albumen.

Mr. J. SMITH and Mr. HOWARTH had found that edging the plate with some medium repellent of the water was the only method of obviating it.

The CHAIRMAN said that he had been troubled with transparent spots in plates which had been albumenized and kept for some time, and on examining the plates he found the spots were visible before coating, having the appearance of spots of moisture. He used a mixture of hydrochloric and sulphuric acids for cleaning the plates.

Mr. SMITH then suggested an explanation of the spots upon Mr. Howarth's plates. The surface of glass not being perfectly homogeneous, it was possible that a slight trace of acid might have been left in the pores of the glass which might attract moisture, sulphuric acid having a great affinity for water. Or if the plate were cleaned with nitric acid, and afterwards rinsed with ammonia, nitrate of ammonia would be formed, which being a very deliquescent salt would produce moisture. The same result would occur in the case of emulsion films; the film would become disintegrated and produce a transparent mark.

After a desultory conversation, the meeting adjourned.

Talk in the Studio.

THE PAGET PRIZE.—The following are the members of the Council of the Photographic Society appointed to serve on the Committee for the Paget Prize for Dry Plates:—Mr. V. Blanchard, Lieut. L. Darwin, Mr. S. T. Davis, Mr. P. Mawdsley, Colonel Wortley. Competitors are informed that we shall publish the address to which the plates are to be sent, probably in our next issue. In case the competition is a close one, it might be advisable to send for trial more than the minimum number of three dry plates.

PHOTOGRAPHY AT A BALL.—At a fancy dress-ball held at the Vestry Hall, Chelsea, on St. Valentine's Eve, Signor Lombardi had a large-sized Luxograph fitted up in the gallery of the ball-room, and it was worked under the supervision of the patentees, Messrs. Alder and Clark, who, during the evening and night till 4-13 the next morning, took over 120 full length cabinet negatives, using the gelatine plates of Messrs. Wratten and Wainwright, the exposure varying from two to seven seconds, thus evincing the practical utility of the Luxograph. During a period of three hours in the night, negatives were made at the rate of eighteen per hour, a feat impossible with wet collodion.

ENLARGEMENT BY ARTIFICIAL LIGHT.—The Autotype Company have just issued a circular referring to their enlargements, the excellence of which has always been acknowledged, but the delay in the production of which has been a serious source of trouble to their customers. They now announce that by the use of a brilliant artificial light, and some triumphs of optical skill in the shape of enormous condensers, they are enabled to expedite their operations very greatly, and turn out excellent enlargements in all weathers within a fortnight of order. The nature of the artificial light has not yet transpired.

THE JUDGE ON COLOURED PHOTOGRAPHS.—A correspondent forwards us the following cutting from a Brighton paper, remarking that the judge's observations are rather cutting from the town that boasts a photographer as alderman and ex-mayor. "In the course of hearing a claim by a photographer at the County Court, on Thursday, to recover for three coloured photographs, Judge Martineau confessed that he himself looked upon coloured photographs as the most atrocious things ever invented, as being disgraceful from an art point of view; but he had no doubt they had a market value, and that people paid extravagantly for them—far more than they would think of paying to artists, young artists, for real works of art, the result of true skill and brain work."

PHOTOGRAPHIC REVOLUTION.—*Funny Folks* has the following:—"The PHOTOGRAPHIC NEWS announces 'a revolution in the studio,' of which Mr. Hazard is the leader. He has, it seems

abolished the negative bath with a positive gain, and reduced twenty-minute sittings to two. With these advantages we feel justified in regarding him as a winning Hazard."

BALLOON PHOTOGRAPHY.—Mr. Woodbury writes to the *Times* as follows:—"Among the various uses to which photography has been applied, that of reconnoitring from a captive balloon has had the least attention paid to it, principally from the danger to the operator in making ascents over an enemy, and, until lately, owing to the want of a process for obtaining negatives of sufficient rapidity to overcome the motion of the balloon. Both these difficulties are now overcome: firstly, as it is now quite practicable to send up a small captive balloon holding the camera and sensitive plates, the exposures being effected by means of electricity through the cord holding the balloon and apparatus; and, secondly, by the late strides made in the rapidity of dry plates (those of Swan and others), enabling views to be obtained even when swinging the camera in the hand. Had our army at the Cape been provided with such an apparatus, the cost of which would not exceed that entailed in firing a single shot from one of our big guns, the number and position of the enemy might have been noted, and the great disaster possibly averted."

MAGIC LANTERN ENTERTAINMENT.—A correspondent forwards us a cutting from the *Guernsey News*, from which we make the following extract:—"We were much interested on Thursday evening in a visit to the military hospital, Fort George, where Sergeant Morrison, of the Army Hospital Corps, had provided a magic lantern entertainment for the inmates. There were also numerous visitors present. With a view to relieve the monotony of hospital life the sergeant has provided a first-class lantern at his own expense, which with a very large series of slides, principally photographs taken by himself in different parts of the world, he is able to afford a pleasant and profitable evening's entertainment. In preparing these slides, Sergeant Morrison has been greatly assisted by Mr. Howes, army scripture reader, of Jersey, who has very effectively coloured many of the photographs. We were particularly struck with the simplicity of the apparatus employed. Having for many years made entertainments of this kind a hobby, we know a little of the trouble they entail. It is one thing to sit for a couple of hours and enjoy the sight of beautiful scenes magnified upon a screen, but it is quite another thing to go through the ceremony of preparing gas and rigging up the intricate apparatus to prepare for the same. The latter is (or, at least, has been) an ordeal which but few have cared to encounter. So trying has it been to the patience, and so bitter have been the disappointments attending failures after all the pains, that every new method which science has from time to time introduced to give the best possible effect with the least possible risk, expense, and trouble, has been caught at eagerly and tried immediately. Of all these improvements, however, nothing has come under our notice hitherto which has so completely cleared the path from obstacles in providing such entertainments as that which we witnessed on Thursday evening. The apparatus used was a triplexicon lantern, the patent of W. C. Hughes, London." Then follows a description of this lantern, with eulogy of its merits.

To Correspondents.

H. F. W.—Over-exposure will produce thin negatives on gelatine emulsion plates. Using a stronger solution of pyro will give more intensity. From the example prints enclosed, however, we are inclined to think that diffused light is the chief source of your trouble. Remember that your dark-room must be, actinically, much darker for these plates than is required for wet collodion. More care in this respect, and a little less exposure, will, we think, remove your trouble.

J. B.—Chromotypes are carbon prints; but all carbon prints are not chromotypes. The latter are supposed to be produced upon a special tissue, and by a special method. A licence is required for the practice of the chromotype method, which has been fully described in our columns. For full information as to terms and cost of licence, write to the Autotype Company, the patentees. They will teach you the process if you take a licence.

W. D. BENNETT.—Captain Abney's Instruction Book is the most useful recent practical work on photography. M. Liebert's work is probably the most recent in French. Dr. Van Monckhoven's *Traité* is, probably, one of the best in the French language.

R. B. L.—The revolving albums were not made in leather, but of wood with glass in front. We know nothing of them beyond what we saw at the Exhibition.

TEN YEARS' SUBSCRIBER.—An emulsion plate may be a dry plate, or it may be worked in a moist state. The name dry plate simply is most commonly given to a plate prepared in a bath like wet collodion plates, washed, treated with a "preservative," and dried. An emulsion consists of a vehicle like collodion or gelatine in which the sensitive silver salts are very finely divided, and held in suspension, forming an emulsion. 2. A properly produced dry plate should be thin and transparent enough to print as quickly as a wet plate. The negatives of which you complain are probably a little fogged; a little too much light in the dark room will produce this condition.

HUGH WALKER.—Your best course with the facilities you possess is to produce first a transparency from your small negative, and from that an enlarged negative. There are various modes of producing transparencies. If you are familiar with any of them, use it; but if not, try the method described by Mr. Blanchard on p. 33 of our last YEAR-BOOK. In any case, take care that the transparency is clean and well defined. Then from this transparency make an enlarged negative. If your quarter-plate lens have an equivalent focus of seven inches, which will be somewhere near its mark, and you wish to enlarge to four times the size of the original, your camera will require extending to thirty-five inches, so as to give this distance between lens and sensitive plate; and the transparency must be placed $8\frac{1}{2}$ inches in front of the lens. It is possible to produce an enlargement direct upon paper, as you wish; but it is not easy to produce a good enlargement so. In such a case you must use the camera as a magic lantern, and use a strong artificial light. Expose the sensitive paper wet, and develop with gallic acid. You can purchase iodized paper ready for silvering of Mr. Solomon, who also sends instructions for its use. The smallest sized condenser found suitable for use with a solar camera is one of 9 inches diameter, and 18 inches focus. Such cameras require direct sunshine. We know nothing of the firm you mention.

ARTIFICIAL LIGHT.—You will find some recipes for pyrotechnic compounds in the present issue. We do not remember the precise compound which was used by Mr. Morle. It was a very brilliant light, something of the nature of the Bengal light. Moule's patent was for the lamp, not for the fire.

ALBION ALBUMENIZING COMPANY.—We have received a letter from this Company expressing disapproval of the answer given to "W. W." in a recent issue in reply to his enquiry for their address. The case is very simple. We have received during the last month or two several enquiries as to the commercial use of Mr. Willis' platinum process. In reply we referred enquirers to the Albion Albumenizing Company, who were, and, as far as we know, are still, agents for the process. We next received some enquiries for the address of the Company, one correspondent saying he had sent to their address as he found it advertised, and had received no answer. In order to reply accurately, we searched for their most recent advertisement, expecting to find it in the YEAR-BOOK, but not finding it, we answered that we did not know it, and expressed a fear, which our correspondent had suggested by asking us if anything had happened, that such might be the case, the thing happening, being in our mind illness, death, removal, or change in its varied forms. Our correspondents think our answer was not couched in proper language, and ask for an apology. If they will tell us the ground of offence, we will apologize with pleasure. In the meantime we are glad to hear from them, and should have been glad to insert their address now, but their communication does not help us to do so, as the printed address on their note, "90, West Regent Street, Glasgow," is struck out with a pen, and the only address remaining is "Works, Hammersmith, London, W."

ONE IN A FIX.—Very shortly. The first time we can properly spare space.

OSCAR RÆTHEL.—There are two photographic societies in London: the Photographic Society of Great Britain, 5, Pall Mall East; and the South London Photographic Society, the meetings of which are held in the rooms of the Society of Arts, John Street, Adelphi. We shall have pleasure in receiving the sample of collodio-chloride paper of which you speak.

BUTTERFLY.—The burnt sienna backing would doubtless help you. On the question of exposure it is absolutely impossible to speak with any approach to accuracy or precision, the terms "good light," "bad light," "well-lighted," &c., being so purely relative. Speaking generally, we should think ten minutes a very long exposure.

CHARLES WHITE.—The subject of blisters in albumenized prints has been much discussed, and many remedies proposed for which we must refer you to book numbers. Immersing the print in strong methylated spirit before fixing is found by many to answer. Longer floating on the silver bath is often a remedy.

W. COBB sends us a letter calling our attention to the fact that he announced some time ago, at the South London Society, that he had abandoned wet plates for studio work. He sends us some charming results from dry plates. His letter shall appear in our next.

Several Correspondents in our next.

The Photographic News, February 28, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AND PUBLISHERS.—ANOTHER PROCESS OF PHOTOGRAPHING IN COLOURS.—PHOTOGRAPHY AND BALLOONING.—THE LATE MR. LE NEVE FOSTER.

Photography and Publishers.—Photography is made use of by publishers in an important manner as a means of reproducing woodcuts for advertising purposes. We had in our hands recently a little pamphlet on every leaf of which was a picture of some sort, reduced by means of photography from the original work. In this case the publisher desired to advertise a dozen of his illustrated books, and no better means of doing this could hardly be imagined. The style and value of the engravings in the book could at once be judged from the reproduced specimens, which, moreover, had the effect of interesting the casual observer far more than any other advertisement could have done. Indeed, the publisher, instead of producing an uninteresting pamphlet of advertisements which few would be tempted to peruse, had produced a little picture book that one was loth to throw away. His pictures, big or small, had all been reproduced of such dimensions as to suit the advertising pamphlet, and the consequence was, a result was produced that could not fail to please. One only wonders, in looking at such things, that more attempts are not made in the same direction, not only for advertising purposes, but for multiplying editions. Type may be reproduced in type, in the same way as a printed woodcut will yield another eligible suitable for printing from again. If type is good and clear, and printed upon white paper, the production of other types, perhaps a little smaller, presents no difficulty, and it is surprising that photography is not at times employed upon such work. If there are plans or sketches with the letterpress, the camera at once affords the easiest mode of reproduction; the only precautions to be taken when the photo-types are produced being, that proper paper—with the finest possible surface—is used for printing. In the reproduction of music and work of that stamp, the lithographic or zincographic methods are more suitable, and the work is then simpler still. There must be a vast deal of old and valuable music that might be copied with advantage in this way with the camera, and the latter would at once afford the means of producing several editions of various sizes. In the case of part songs, where the singers have to hold their music in their hands and carry it about with them, it would be a great boon to be provided with small sheets of music; and if these were reduced by photography from larger editions, there would be no doubt about the clearness of them. We can only suppose that it takes some time to open the eyes of our publishers to the facilities of photography, and to the aid the camera can lend them in their work.

Another Process of Photographing in Colours.—Another process of photographing in colours has been brought forward. These methods are now getting rather numerous; and yet, somehow, we do not get on so well as we might with the taking of negatives with colours, or rather of producing prints from negatives that have all the varied tints of the original. The last process is heralded in *Truth* in the usual manner, and is of course to "revolutionise photography." We are unacquainted with the merits of the new French invention, but, having known so many methods of colour-photography, one naturally gets sceptical about them. As a rule, such novelties are brought before the public with a good deal of talk about patents, and about the work of early investigators, and the author of the process seeks to show that he has triumphed over all, and has now attained the end everybody has been striving to reach. That is what the public are told. To photographers, photographic societies, and photographic journals, another story is usually unfolded. They are to understand that it is not the securing of direct photographs in colours that have been achieved, and must not be led away to suppose so, like the foolish and

ignorant public who read the first manifesto. To them the method is very simply explained, and the inventor would be the last person in the world to attempt deception. But, for all that, there is to be seen at public and private exhibitions, from time to time, coloured work which visitors have put before them as photo-chromes, chromic-photographs, &c. Half a dozen processes at the very least which have been brought forward of late are simply based on the principle of applying colours behind the photographic film. When Woodburytype was first published to the world, we remember seeing "coloured photographs" produced in this manner, a transparent gelatine film being put over a roughly coloured surface; and since then the same principle has been applied in various ways with carbon and silver transparencies. The dodges are in themselves more or less clever, and sometimes produce very charming results, but to pretend for one moment that photography in colours has anything to do with such productions is of course simply absurd.

Photography and Ballooning.—It seems well-nigh settled that ballooning is to become an institution of the British Army, and we are to have one of the companies of Royal Engineers equipped as a balloon corps. The main duties in connection with such a service will be in connection with reconnoitring the enemy, or surveying a hostile country, and in carrying out such duties the photographer should be able to render assistance. The great difficulty in balloon photography must always be to overcome the gyrations and general unsteadiness of the machine. In the case of the great Paris balloon there was less reason to fear defects from this cause, since the balloon was steadied as far as possible by ropes from its girdle. In ordinary balloons this somewhat complicated arrangement could scarcely be expected, and hence the operations of photography are beset with far more difficulty than was the case in the large Exhibition balloon. However, M. Nadar, of Paris, in some attempts undertaken seven or eight years ago, did succeed very well in efforts to secure photographs under the ordinary conditions of the aeronaut, and now that we are in possession of plates more sensitive than ever, there should be less difficulty still in the matter of military balloon-photography. In bush-covered country, such as Zululand, there would be plenty of scope for ballooning, and now that there seems no difficulty about making hydrogen gas on the field, or conveying it thither in a compressed form, Government may be induced to give an equipment of the kind a fair trial.

The Late Mr. le Neve Foster.—Mr. Peter le Neve Foster, the secretary of the Society of Arts, one of the earliest members of the Photographic Society, and for many years one of the council of that body, died suddenly last week at his residence. Gout of the heart is ascribed as the immediate cause of his death, for Mr. Foster was in enjoyment of good health at the time, and we ourselves saw him chatting with some friends under the Regent Street Piazza within twenty-four hours of the occurrence. The deceased gentleman resided at Wandsworth, and he left the Society of Arts office on the 20th inst. in his usual health and spirits. He walked from the station, it appears, which was his usual custom, and none of his family noticed any alteration in him. However, while he was by himself for a few minutes, he was suddenly seized with an attack which carried him off in a few minutes. In fact, his daughter, coming into the room, found that he had fallen back from his chair dead. Mr. Foster for many years has been the life and soul of the Society of Arts, and his death coming so close upon that of Mr. Davenport, the late energetic financial officer of the Society, will be a sad blow to that body. These two officers worked hand in hand for a long time, and the vigour and life of the Society was due as much to them as to the lectures and meetings with which the Society is associated. Mr. Foster, we believe, was on the eve of retiring from the secretaryship at the time of his death, and a subscription had been set on foot to raise a sum of money to purchase a suitable testimonial on retirement. He was a Master of Arts, and barrister-at-law.

ON THE CAUSES OF INSOLUBILITY IN CARBON TISSUE.

BY E. BRIGHTMAN.*

ALL workers in carbon printing at times experience the annoyance caused by batches of the sensitized tissue becoming partly or entirely insoluble. The subject having been brought before us at one of our meetings in the form of a query for our question-box, and no satisfactory solution having been given, I have been making a few experiments with a view to throwing some light upon the matter.

The experiments I have made, though they do not point to any one sole cause of insolubility, lead to a knowledge of some of the causes, and knowing the causes may, at any rate, teach us what to avoid.

It is usually asserted that slow drying of the tissue, and moisture remaining in the gelatine after sensitizing, is the sole cause of partial or total insolubility. This I certainly cannot admit, for I have had batches of tissue rapidly dried and kept in a perfectly dry atmosphere which have become insoluble in the course of a few hours. On the other hand, tissue which has been some day or two in drying has remained perfectly soluble, and given good and satisfactory prints. Doubtless, moisture in the film will cause it more readily to absorb injurious fumes, and thus tend to insolubility; but, given a perfectly pure atmosphere, I do not consider that moisture *per se* can in any way cause insolubility. I am inclined to think that the secret of keeping the sensitized tissue soluble is to exclude the air as far as possible, and to take care the air in which the tissue is kept should be perfectly pure and uncontaminated with fumes of all sorts. To test what external causes tend to insolubility, I have subjected pieces of sensitized tissue to the following gases, fumes, and vapours:—Ammonia, carbolic acid, acetic acid, sulphuric acid, ether, alcohol, sulphurous acid, phosphoric acid, iodine, oxygen, carburetted hydrogen, carbonic acid, collodion vapour, with the following results:—

Ammonia increases the solubility of the tissue; pieces of tissue exposed to the vapour of ammonia and also to fumes from the ammonia carbonate dissolved at a lower temperature than other tissue.

Carbolic acid causes perfect insolubility.

Nitric acid causes perfect insolubility, water at boiling point having no effect whatever upon the gelatine.

Phosphoric acid produced partial insolubility, and appears to act irregularly, the tissue being rendered partly insoluble in patches.

Finding that ammonia tended to increase solubility, and that carbolic, nitric, and phosphoric acid produced insolubility, I was led to the conclusion that alkalies were favourable, and acids opposed, to solubility, and was therefore greatly surprised, on testing the sample of tissue which was exposed to the fumes of acetic acid, to find that it was more soluble than the normal tissue, and dissolved at a lower temperature than any of the other samples.

Sulphuric acid appeared to have no effect upon the solubility of the tissue, other than might be expected to arise from the gelatine becoming very dry and brittle in consequence of the well-known property sulphuric acid has of absorbing moisture, the highly dried tissue naturally dissolving less readily than those containing more moisture.

Fumes of collodion appear to produce partial insolubility. In order to test whether this was caused by the alcohol and ether or by the iodine, I subjected portions of tissue to the vapour of ether and alcohol alone, without any effect on the solubility. We may therefore conclude that in this case iodine was the cause of insolubility.

Oxygen appears to have a slight tendency to produce insolubility, but as the oxygen was not carefully purified, it probably contained traces of chlorine; this experiment, therefore, cannot be accepted as satisfactory.

Carburetted hydrogen produces slight insolubility; car-

bonic acid gas apparently no effect; fumes from burning house gas, decided insolubility.

The result of these experiments shows that while some gases, vapours, and fumes are harmless, others are decidedly injurious; therefore sensitized tissue should be kept with the air excluded, as can be done by placing the sheets between stout plates of glass under pressure in an ordinary screw-back printing-frame.

As ammonia and acetic acid both tend to solubility, I intend to try whether keeping the tissue between sheets of paper impregnated with their fumes will assist in preserving the paper in a soluble state for a lengthened time.

The result of the trials shall be communicated at a future meeting.

PATENTS IN CONNECTION WITH PHOTOGRAPHY BY ARTIFICIAL LIGHT.

BY W. J. CHADWICK.*

IT was my intention to have given you this evening a more exhaustive communication on photography by artificial light in conjunction with some experiments in which our friend, Mr. Garside, had kindly offered his assistance; but as I fear we have quite as much before us as we shall be able to get through to-night, I will simply give you a few facts and dates in connection with patents referring to that subject.

The first patent I can find recorded on this subject was granted to Antonie Jean Francois Claudet, in the year 1841, No. 9193, and is styled "Certain Improvements or Means of, and Apparatus for, Obtaining Images or Representations of Nature or Art." On page 3 he mentioned artificial light for taking photographic portraits by night. The artificial light is produced by the combustion of coals promoted by oxygen gas; and on page 3, line 33, he states that a reflecting mirror of a concave form must be adapted behind the light, and the light placed in the axis of the reflecting mirror to be used in photography by artificial light.

The next patent was granted to Pierre Bernardet de Lucenay in 1852, No. 575, about eleven years after Claudet's, entitled "The Production of Photographic Images by Artificial Light." On page 1, line 10, he states that the lights must be parallel or diffused. It is rendered parallel by placing the light in the focus of a parabolic mirror. On page 2, line 4: "The light is to be rendered diffused for portraits. In this case the interposition of blue cobalt glass will be required." On page 3, line 8, the light is said to be produced by an electric battery, or by the combustion of pyrotechnic compositions. On page 4, line 16 to 25, he makes use of unpolished glass on paper, and where the electric light is employed, it will be convenient to intercept that light by means of the unpolished glass or paper, and so render the light more diffused when thrown on the object to be photographed. You will see that in this patent artificial light and the use of the reflector are not new, as M. Claudet used them eleven years previously.

Next we have the patent of John Moule, 1857, No. 478, and styled "Improved Apparatus to be used in Burning Pyrotechnic Compositions or Preparations for Producing Artificial Light of Various Colours." From this patent it will be seen that a lantern is to be used for burning the pyrotechnic composition, with a pipe or tube to carry away the vapours given out by the combustion of the compounds, and so rendering it applicable to photographic purposes in rooms or close buildings. On page 2, line 24, is mentioned that coloured glass will be found exceedingly useful for photographic purposes. Line 26: Reflectors may also be adapted to the apparatus for the purpose of collecting and throwing the rays of light in any particular direction. You will find that the use of pyrotechnic compositions and coloured

* Read before the Bristol and West of England Amateur Photographic Association.

* Read before the Manchester Photographic Society.

glass are not new in this patent, as the same were patented by De Lucenay.

We next come to the patent of Henry Vander Weyde, 1878, No. 446, entitled "An Improvement in Illuminating Objects to be Photographed, and the Interior of Public and other Buildings." On page 1, line 14, is stated that "the invention consists in the employment, in combination with the electric or other artificial light, of a parabolic or other concave reflector of comparatively large size, in the focus of which the light is placed, and a shield or screen of opaque or semi-transparent material placed on the opposite side of the light to the reflector." Now what is not new in this patent is the use of the electric light, screens before the light, and reflector, the above having all been previously patented by Dr. Lucenay, Claudet, and Moule.

The next patent is that of Messrs. George Edward Alder and John Archer Clarke, granted in 1878, No. 1442, and entitled "Improvements in the Means and Appliances for Producing Powerful Artificial Light for Photographic and other Purposes." On page 2, line 15, it is stated that any of the well known actinic artificial lights may be used—by preference, the pyrotechnic; at line 21, a reflector is mentioned of a suitable size—by preference one of four or five feet diameter; at line 24, in conjunction with the reflector a semi-transparent screen or sereus is used between the source of light and the objects to be photographed, so as to disperse or diffuse the light; at line 36, it is said that in practice it is often found desirable to subdue the principal light by blue tinted glasses in front of it; at line 38, we find that when either pyrotechnic composition or magnesium is employed, a lantern of glass must be used, with a chimney to carry away the fumes. Now what is not new in this patent is the use of pyrotechnic composition; the use of a lantern for burning composition; the use of a reflector; the use of a screen in combination with the reflector to diffuse the light; and the use of tinted glass and the chimney or pipe to carry away the fumes of the burning combustions; the above having been patented by Claudet, De Lucenay, Moule, and Vander Weyde.

From what I have said you will see that there is very little, if anything, new in photographing by artificial light, and that it is free to the world in the form of electric and pyrotechnic lights; the use of lamps, with or without chimneys or flues; the use of reflectors, parabolic or concave; and with blue or tinted glass, or other medium for the light to pass through.

AN EMPLOYER'S EXPERIENCE OF OPERATORS

THE time was, in years long since past, when a common reproach hurled against photography as a profession, was to the effect that it was the general refuge of those who had failed in all other trades and professions—the "needy villain's general home!" In the present day, almost every operator has had some training or apprenticeship to his profession, which fits him for its practice. An employer, writing in the *St. Louis Practical Photographer*, is puzzled, in looking through advertisements, to find so many "first-class operators" wanting engagements, and so few of any degree of excellence to be found when wanted. Here are some of his experiences with operators engaged on "the tramp."

"My last applicant, only a few days since, had only worked about a year, and when I asked him what his formula was for toning, he says, 'Which?' I said, 'What do you use in your toning solution to get the best results?' 'Oh,' he says, 'I use gold to tone with; I think it is best.' 'But,' I said, 'what do you use with it—how do you mix it up, and how do you use it?' 'Well,' he says, 'I can't just exactly tell now, but I think we use some kind of soda in it; but if you want me to

work for you I can send and get the recipes from my brother, that tells just how to do it in fine style.'

"Shades of Daguerre! Claims to be a practical printer and toner, and yet must wait until he could get his recipes before he could do anything, and three years' experience at that!

"Then I showed this gentleman my photographic publications, that have been accumulating for years—more than he could lift—all full of formulas, instruction, advice, &c., and his eyes just protruded right out of their sockets, and he candidly confessed that 'he never knew that there was any other photo. publication except *Anthony's Bulletin*, and he had not seen many numbers of that.'

"Now, perhaps, it would not be out of place to give you some of my experience with some of the operators that have sought employment with me; for I am so situated that I am obliged to have a helper under the skylight. I will say just here, that I have had a good number of men in my employ that were both artists and gentlemen, while others have proved a fearful failure on my hands.

"At one time, some eight years ago, I was in want of an operator, and one day, while busy under the skylight, an ungainly-looking specimen of humanity presented himself and asked for a situation. As soon as I was at liberty, I looked him over. One thing certain, he had no beauty to recommend him. He had tawny-white and very long hair, calico eyebrows, a mouth that looked as if he had never said but one word, and that was 'ker-chug;' and feet! Great Sampson, what feet! All I can say about those feet is that they were just immense, and I don't think even to this day he is able to take care of them alone. But I needed help, and must have it; so I engaged him at once, big feet and all. So the next morning Mr. Slouch went to work. He silvered the paper for the day's printing, and when he got through he broke a sixteen by twenty tray all to smithers—he set it up to drain on the floor in the dark room, and then tramped those big feet into it some way, and of course the tray had to suffer.

"The second day Mr. Slouch got along very well till about four o'clock, with one exception; he undertook to make some ferrotypes for a customer, and instead of flowing the plate with collodion, he used varnish; of course he could not develop up an image, so he went to doctoring the bath, and what he put into it never will be known, but it never made a picture after that. About four o'clock he wheeled the posing-chair around to the stove, and then elevated those gigantic feet to the top of it; but whether the feet were too heavy, or the stove sheered off in actual disgust, I am not able to tell; but one thing I do know: I heard a most terrible clatter, and supposing that the man in the moon had lost his hold, and fell down through my skylight, I hastened into the room. What a sight met my gaze! Mr. Slouch sprawled out in one direction, the posing-chair in another, and the stove lying around kind of promiscuously like, the ashes flying, the carpet burning, and the smoke filling the room to suffocation. After setting things to rights again, I asked for an explanation from Mr. Slouch. All he could say was, that he 'kinder guessed he must have got to sleep somehow.' I was getting somewhat discouraged with my operator, but thinking of the old adage, 'Wait; bad beginnings makes good endings,' I decided to try him a little longer.

"The next day, about the first thing he did to distinguish himself, and to show his artistic skill, was to sit down on a beautiful and delicate posing stand, and it being a very delicate affair, he continued to sit down until he reached the floor, which he did with a vengeance that always accompanies the meeting of two solid bodies. Ilypo and Iron! but I was getting out of all patience; but I had orders to drive me for over a month at least, and I must have help of some kind; so he was set to silver the paper, which he did after a fashion, and I began to take courage again. But

alas! for human expectations. After pouring the bath into the bottle again (there was about three quarts of it), he had to set it in the sun. To do this he must go through the parlour, as I had a special place for it on the porch outside. As he entered the door something happened to those feet. What it was I never knew; but the bottle struck a marble-top table, and divided itself forthwith. The bath solution came down like a miniature Niagara, and deluged the carpet, the walls, and everything around it, while Mr. Slouch lay upon the floor in terrible combat with those feet. I picked out a few choice words from my vocabulary and made him a present of them, and advised him to run a threshing machine for about three months, and run it all the time on those feet, and perhaps in that time he would be able to get them where he could manage them.

"Not long after this experience another artist made his appearance, seeking a situation. His name was Wm. Rummy. He claimed to be a first-class operator. He had worked in all or most of the galleries of any note from New York to San Francisco. He was out with Duke Alexis on the plains, and made views during the big buffalo hunt. He had recommendations for work from artists that I know. He was intelligent, good-looking, knew what he was about, but had a very seedy look, knees and elbows out; in fact, too shabby to appear in the role of an artist in a genteel place. He had been used to getting fifty dollars per week, but would work for me for twenty-five dollars per week. I told him his appearance did not indicate a fifty dollar a week salary, and there was one conclusion I would be obliged to form concerning him, and he admitted it. He was sorry for it, but drink had wrecked him. But he had sworn off; he would start new if I would employ him; so I engaged him. He was all he advertised, a true artist, a genial, warm-hearted gentleman, a first-class business man for three months (and if his eye should happen to fall on these lines he can see that I appreciate those three months of his manhood to-day as much as I did then), and then there came a fall. He gave way to drink so, that he would come to the skylight so drunk that he could hardly stand. At last I discharged him. He got out of money, then he sobered up and came back and worked a few days, then went on a spree while the money lasted. But at last I found that he used up two quarts of alcohol, which was more than I could afford, so I bid good-bye to Mr. Rummy.

"But, after all, I don't know as I ever had a worse nuisance around me in my life than one Frenchman that I employed once, by the name of Mr. Dandic. He was neat as wax, wore kid gloves, stove-pipe hat, broad-cloth coat, had a very fair stock of photographic knowledge, and self-conceit enough to supply all the heathen Chinese this side of sunrise, and every lady that came to the gallery for a sitting, whether a maiden of sweet sixteen, or the grandmother of sixty, fell irrevocably in love with Mr. Dandic; that is, if you let him tell it, and he was always telling it; in fact, the time spent in polishing up and beautifying himself, and talking fool to ladies, and then boasting of it afterwards, used up all his time. Even in the middle of the day, when we were crowded with sitters, he would talk his senseless twaddle with some young girls, who only wanted to see how big a fool he would make of himself, while good paying customers were waiting. And when there was any work to be done, like cleaning, sweeping, washing plates, getting water or wood, he would take money from my drawer to pay some boy to do it, while he waxed his moustache, parted his hair in the middle, or made a fool of himself generally. I had to call him a bad lot, and let him break hearts under some other skylight than mine.

"But, to conclude, I don't think, as a rule, that good competent operators are apt to go begging for a place. There is a class of men who fifteen years ago were in high feather. They are those mechanical operators. In those

days you could find them in every little town; either in some garret, or in a car, or portable shanty, they could hold their own with the rest. But photography has advanced with giant strides, and to-day it takes an artist to make a photograph that will bear comparison with the work that is sent out by photographers of the world; and the consequence is, that machine workers have lost their patronage, and have been obliged to shut up their shanties; for even pictures at the ten per cent. per doz. price fail to bring the crowd of customers they wish for. So, of course, there are hundreds of them lying around loose, or on the tramp looking for a job; and as they are not wanting in cheek, and you may be wanting some help, the chances are that you will be employing one soon, so I want to give you a little advice—i.e., beware of the two extremes: never employ a slouch nor a dandy."

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

IN the following chapter the author describes the behaviour of gum and dextrine with the chromates.

Gum—under which denomination are included both *gum arabic* and *gum senegal*—behaves with potassium bichromate more like gelatine than sugar. This substance, which consists essentially of arabin or arabic acid combined with calcium and potassium, is soluble in its own weight of water, but when heated to from 120° to 130° C. it is converted into a salt of metarabin, which is insoluble in water. When a solution of gum is acidulated with hydrochloric acid, and treated with alcohol, arabin is precipitated as a white amorphous powder, which, so long as it is kept moist, is soluble in cold water; but when once dried it is converted into metarabin, an isomeric modification of the same substance, which merely swells up in water, and refuses to dissolve, though if it be treated with alkalis it dissolves rapidly, forming arabates.

A dilute solution of gum decomposes when exposed to the air, and turns sour after only a few days. In such a condition, though it may still possess adhesive power, it is useless for photographic purposes; but the addition of a little quinine or carbolic acid will check the decomposition. Gum is not precipitated by chrome-alm, but forms merely a green liquid, and when this is evaporated to dryness, the residue is no longer soluble in water. In fact, so soon as the solution is allowed to dry it becomes insoluble; this, in the opinion of the author, is due to the formation of chromium metarabate. The insoluble mixture of chrome-alm and gum resists for a considerable time the action of strong alkalis and of hydrochloric acid.

Like chromated gelatine, the mixture of gum and potassium bichromates is most sensitive when in a dry state; when exposed, it turns brown, and becomes insoluble in those parts that have been acted on by light. When in solution it may be kept for days exposed to diffused daylight without undergoing any change; but when dried it will become insoluble after a time, even in the dark; in the latter observation the author is corroborated by the experience of Wharton Simpson. If, however, a little carbolic acid be added to the same mixture, saturated to excess with ammonia, it will keep for a long time in the dark before any symptoms of insolubility make their appearance, while it does not seem to lose at all in respect of sensitiveness.

In former times, carbon photographs were often produced in chromated gum, but the substance could only be used for direct carbon printing where the pictures possessed no half-tones. Carbon tissue prepared with gum must be sensitized by floating the reverse side only on the chromate bath, or the film will be dissolved. For photo-

* Continued from page 41.

lithographic transfer paper, and for photo-lithography generally, as well as for photo-zincography, gum was also at one time used, but was soon superseded by gelatine and albumen. In the carbon process, gelatine is superior to gum, in rendering the requisite softness and half-tones of the picture, and in photo-lithography chromated albumen is to be preferred to chromated gum, both for the stone and for the transfer paper. A chromated mixture of gum and dextrine is sometimes used in photographic etching on metal, and in printing fabrics chromated dextrine is used on account of its being rendered insoluble by the action of light. There is one property of gum which renders its use in photography still valuable—the property, namely, that when mixed with a chromate and exposed to light it loses its hygroscopic qualities; it is on this account preferably employed in the dusting-on process, but always in combination with other highly hygroscopic substances, such as cane or grape sugar, treacle, honey, or glycerine.

The image on a film of chromated gum is destroyed by the action of the caustic alkalies, particularly when the solution of the latter is heated. An image on chromated gum develops completely in cold water, and in this respect the substance has a decided advantage over gelatine; if the development works too slowly, the addition of one or two per cent. soda to the developing water will expedite the action. Calcium chloride also has a distinctive action on the image on the chromated gum. Like gelatine, the gum film is most sensitive when it contains as much potassium bichromate as possible, up to the point of the latter's crystallizing out. According to the experience of the author, a carbon paper prepared with gum requires from five to ten times as long an exposure as one prepared with gelatine. He also found that chromated sugar is more sensitive than chromated gum, and recommends, therefore, the addition of sugar to the gum as an accelerator.

Gelatine has a peculiar action on gum; if gum be added to gelatine, and the mixture sensitized with ammoniacal potassium bichromate, the behaviour of the latter substance is very little altered by the addition of the former. Its solubility in hot water is somewhat increased, and to obtain the same degree of insolubility for the image as with pure gelatine the exposure must be longer. But if the mixture be acidulated with acetic acid, the film after exposure and desiccation is less soluble than one consisting of chromated gelatine only with acetic acid. Gum therefore renders an acid solution of gelatine less soluble, and the reason for this is believed by the author to be that gluten and arabic acid form a compound soluble only with difficulty. Borax thickens a gelatine solution, and the alkaline reaction of the same substance tends to render the chromated gelatine more insoluble. Calcium nitrate gives to gum* an enormous power of adhesiveness.

In order to be able to follow completely the course of the action of light on a mixture of gum and potassium bichromate, the author undertook the following analysis. He first prepared pure arabin by precipitating it from a solution of gum by means of hydrochloric acid and alcohol. By the addition of about twelve parts by weight of caustic potash in water to 100 parts by weight of this arabin, he obtained the potassium arabate, the accepted formula for which is $3(C_{12}H_{20}O_{10})_2K_2O$. The solution was then evaporated to dryness, and the salt submitted to combustion; the residue was found to contain 10.13 per cent. of potash, which corresponds very closely with the amount as given by the above formula.

The solution of this potassium arabate was then mixed with potassium bichromate. At a temperature of 100° C. the mixture soon turned green, and after being dried it became perfectly insoluble; it therefore became neces-

sary to prepare a film of the substance, and to dry it at the ordinary temperature. This film was then exposed to light for several weeks, until it had assumed a deep bronze colour; it was then digested first in cold, and then in hot water, and lastly, to remove all traces of chromic acid, boiled in a solution of ammonia. The whole mass was then dried at 120° to 130° C., and submitted to ultimate analysis. The result gave—

Carbon...	...	...	...	...	37.41
Hydrogen	...	...	...	...	5.63
Chromium oxide	...	...	...	...	5.76
Potash(K_2O)	...	...	...	...	9.30

The ash left in the porcelain boat contained potassium chromate and carbonate, with some undecomposed chromium oxide. This residue was well washed, and dissolved in hydrochloric acid; the carbonic anhydride that came off being conducted into a potash bulb, and its amount determined in the usual way, its amount was added to that of the carbonic anhydride obtained from the combustion tube. The undissolved chromium oxide was collected on a filter, and the chromic acid in the filtrate was reduced to chromium oxide by alcohol, and precipitated by ammonia. After the oxide had been filtered out, the solution of potassium chloride was evaporated to dryness, and weighed.

Neglecting the mineral compounds, the analysis of the organic substance gave the following result: carbon, 44.04; hydrogen, 6.63. According to the formula $C_{12}H_{20}O_{10}$ it should have been carbon, 44.44; hydrogen, 6.17. The composition, therefore, of the insoluble chromate gum, after exposure, agrees very closely with that of anhydrous arabin, and we may assume that the photographic image is formed of arabate (or, more probably, metarabate) of chromium and potassium. In this case, also, we see that the insoluble image is not formed by an oxidised organic substance, but by the combination of an unaltered organic body—arabin with chromium oxide.

Dextrine, or British gum, has often been substituted for gum arabic; for it equally turns brown when mixed with potassium bichromate and exposed to light, and also loses its hygroscopic properties. Chromated dextrine, however, only loses its solubility after weeks of exposure, and even when browned is still soluble in cold water. In these respects it differs from gum arabic, and is more like sugar. Dextrine is also used for the dusting-on process, when it is mixed with sugar and other similar substances, but the use of gum arabic is perhaps preferable; it is also employed in photo-lithography. When advantage is taken of its hygroscopic qualities, dextrine may, with effect, be substituted for gum arabic, but where the process depends on the insolubility of the exposed parts, dextrine cannot at all replace gum.

Gum tragacanth, when chromated, is quite as sensitive as gum arabic, but its great insolubility in water makes it useless for photographic purposes. It consists to the extent of more than one half of bassorin (which swells up, but is nearly insoluble in water), and contains only about fifty per cent. of soluble arabin. Mixed with potassium bichromate, and exposed to the light, gum tragacanth gives a brown image, but the parts not acted on only swell up in hot water, and refuse to dissolve. The author attempted to develop images of this kind by means of hot water acidulated with dilute sulphuric and hydrochloric acid, with only a partially successful result. If the development with acid be continued too long, the parts that have been affected by light will also give way. For these reasons gum tragacanth is not adapted for use in chromate-photography; it may, perhaps, be of service in the colotype, but certainly not in the carbon process.

(To be continued.)

* A mixture of this kind is used as a vegetable glue or cement.

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DRY PLATES AN AID TO ARTISTIC PORTRAITURE.

THAT the complete and facile mastery of technical conditions may be an important aid to the production of artistic results few will doubt. Whilst the mind is harassed by technical considerations and doubts as to the best mechanical and chemical means to a desired end, there is little opportunity for carrying out purely artistic aims. Or if the purely artistic aims entirely possess the mind, the technical results must often fail. We well remember the comical distress with which poor Rejlander would hold up a spoiled negative embodying some charming art conception, bewailing the fact that whilst developing, and entirely engrossed in examining the progress of his artistic thought, eagerly watching for the effects of light and shade, composition and expression, as they gradually grew into shape upon the plate, just as he exultantly exclaimed that they were all right, he found that the developer, gathering into separate streams, as he held the plate up to the light, covered the negative with streaks which utterly spoiled the picture!

How often a portrait has lost its chief value, expression, by delay in having a plate ready! The sitter has been posed and arranged with care, skill, and tact. A pleasant flow of conversation has been maintained, and he is interested, and the face is full of life and natural expression. If now the plate were ready for exposure, and a few seconds would suffice for that exposure, what an admirable and satisfactory likeness might be secured! But it unfortunately happens that the wet plate would have been deteriorating if it had been in the dark slide waiting, and so its preparation has been delayed until the last moment, and a brief delay is necessary after the sitter is ready. That delay is fatal to expression: sometimes also to position, as the sitter shrinks from the spirited pose of a moment ago; sometimes even to stillness, as a nervous unsteadiness is engendered by the uneasy moments of waiting. In fine, the portrait is spoiled.

It is unnecessary to dwell upon a multitude of other similar troubles attendant upon the delays involved in the use of plates which must be prepared upon the spot, while the sitter is waiting. The advantages, on the other hand, of having a stock of sensitive plates always at hand, ready for immediate use without a moment's delay, are self-apparent, as are also the aids to artistic success which such material facilities place in the hands of the artistic portraitist. It is to another series of facilities for which the use of dry plates in the studio presents especial openings we should now direct attention. The legitimacy of artistic aids to success in producing pictorial effects in photography is generally felt by portraitists. Judicious retouching is universally admitted, and wherever the

pencil can lend genuine improvements to the photograph, there can be little doubt of the propriety of the photographer availing himself of its use. The plan to which we refer is described by Mr. Eastham in our recently issued YEAR-BOOK. To some extent it has been employed before, especially in producing enlargements. We refer to the plan of producing a transparency from the original negative, and working on that transparency, a method which permits ameliorations considerably greater than can be produced by working on the negative. In a paper read before the South London Photographic Society some years ago Mr. Croughton pointed out these facts. In touching upon the negative, lights alone can be strengthened or added, the shadows cannot be modified. In working on the transparency, shadows, the most important part of the subject pictorially, can be modified, strengthened, or added. The light and shade of the background can be wonderfully modified, or fresh objects added. Mr. Eastham uses a matt varnish on the back of the plate, and with a stump and black lead, or crayons, almost any effect may be produced to which the draughtsman's skill is equal. Or adopting the ingenious suggestion of Mr. Werge, by using the powder process, a landscape or interior may be added by using a suitable negative. The variety of effects possible in this way will occur to every artistic photographer.

The transparency having been duly treated, the reproduction of a negative from it is a simple affair. The simplicity and ease with which negatives can be reproduced in this way by means of dry plates is the point worthy the attention of the portraitist. As Mr. Eastham points out, a few seconds' exposure to an ordinary gas burner, of the sensitive plate under the negative, produces the result. From the completed negative every print is a finished work of art, suggesting the idea that it has received many hours' work from an accomplished artist. We have seen such results as we describe. Need we say more? *Verbum sap. sat.*

THE PHOTOGRAPHIC UNION OF FRANCE.

THE following letter has been addressed by the recently established Photographic Union of France to Monsieur Levitzky, of St. Petersburg, photographer by appointment to the Court of Russia, and Vice-President of the International Jury of Class 12, Group 2, at the late Paris Exhibition.

DEAR SIR AND HONOURED COLLEAGUE.—A new Photographic Society has recently been established at Paris, under the name of the *Union Photographique de France*. At the first meeting of this association, when its statutes were adopted and its executive council elected, it was determined, on the proposition of MM. Carjat and Liébert, that a vote of thanks should be tendered to you for the course of action that you maintained on the Photographic Jury of the late International Exhibition at Paris.

It is well known, dear sir, and the photographic world congratulates itself on being able to acknowledge, that the interests of photography have found in you a zealous and devoted advocate. That the decisions of the jury were not always in accordance with those notions of justice which ought to guide every body of men charged officially with the awarding of recompenses of merit, was not in any way due to you. Though your able and honourable exertions were not always crowned with success, all those who take an interest in the future of photography are not the less eager to thank you for using them.

We are therefore, dear sir, delighted to be able to discharge ourselves of the agreeable duty which the Photographic Union of France has laid upon us. In transmitting to you the vote of thanks which was carried by acclamation, we have pleasure in assuring you that it is rendered not less to the Vice-President of the Jury, than to the individual who has left here among his colleagues so many sincere and heartfelt recollections.

ETIENNE CARJAT
COLLARD
A. LIEBERT
BACARD
EDOARD GOUVENHEIM
H. DELIE
K. VERSNAEYEN

Members of the Executive Council of the Photographic Union of France.

MR. LE NEVE FOSTER, M.A.

It is with deep regret that we announce the sudden death of Mr. Peter le Neve Foster, the well known and greatly respected Secretary of the Society of Arts. Since Christmas last Mr. Foster has been suffering rather severely from the gout, but it was hoped that the disease had left him, and he was recently enabled to resume his duties at the Society. On Thursday last, however, immediately on his return home to his own house at Wandsworth, he was seized with a sudden attack of heart disease, and some of his family coming into the room, where he had been sitting by himself for a few minutes reading the newspaper, found that he had fallen back from his chair dead.

So little expected was the illness that he had finished his ordinary day's work at his office, and had even walked up from the railway station to his own house.

Mr. Foster was born on the 17th August, 1809, and was the son of Mr. Peter Le Neve Foster, of Lenwade, Norfolk. He was educated under Dr. Valpy at the Norwich Grammar School, from whence he went up to Trinity Hall, Cambridge. After having taken his degree as thirty-eighth wrangler in the Mathematical Tripos of 1830, he was elected Fellow of his College. He was called to the Bar at the Middle Temple in 1836, and practised as a Conveyancer till he became Secretary to the Society of Arts in 1853.

Mr. Foster was intimately associated with all the earlier great exhibitions. He was appointed to carry into effect the provisions of the Act for the protection of inventions in the Exhibition of 1851, and was also named treasurer for payment of all executive expenses in the original commission.

During his term of office, the Society of Arts has flourished as it never previously did, and, owing in no small degree to his exertions, it has quadrupled its number of members, and increased its resources in a still greater proportion. Much of its work was originated by the late secretary, and all of it was carried out by him. Even the regular working of such a society involves no small amount of labour and responsibility; but, besides this, the Society has been instrumental in promoting a great many public objects, and in all these it was necessarily upon the secretary that the burden of the work always fell.

From his boyhood upwards, Mr. Foster took a keen and enlightened interest in many branches of science. He was one of the first to take up and practise as a scientific amateur the art of photography, and on this subject he has written a good deal in the pages of the photographic and other periodicals. For many years past our Year-Book has been indebted to his pen for interesting contributions. He was one of the founders of the Photographic Society, and was on its council for many years. He was President of the Queckett Microscopical Club for a year, and also served for some time on the Council of the British Association, the meetings of which he has attended regularly for the past twenty years. For many years he acted as Secretary of the Mechanical Section of the Association. He read several papers before the Society of Arts, and was, of course, a constant contributor to its Journal, the whole series of which, from the middle of the first volume, was published under his direction.

Mr. Foster leaves behind him a very numerous body of friends, to all of whom his genial and kindly character had endeared him. There must be literally some thousands of persons who have profited by the ready advice and generous help which were at the service of all applicants, known or unknown, who came to the office in the Adelphi.

On the occasion of his completion of twenty-five years' service as Secretary, a strong committee was formed to present Mr. Foster with a testimonial. The list for this was just about to be closed, the amount subscribed being over £1,200. Under present circumstances it is probable that a fresh effort will be made to increase this amount, so that a fitting memorial may be presented to Mrs. Foster.

A GOOD MOUNTING MATERIAL.

BY FRANCIS DANN.

THE following has been found an excellent mounting material for both carbon and silver prints. It is very adhesive, does not *penetrate* the paper nor destroy the brilliancy of the prints, and is convenient to use.

Dissolve 16 ounces of good French glue in 30 ounces of water, to which add 80 grains of shellac dissolved in one ounce of methylated spirit, and stir them well together while hot.

Dissolve 6 ounces of dextrine in 8 ounces of methylated spirit and 4 ounces of water; stir well together in a glass beaker, and place it in a saucepan of hot water until dissolved, and of a clear brown colour, when it must be added and well stirred with the glue.

The above quantity may safely be made and poured into a dish or mould for use when required, pieces being cut therefrom as necessary. It is made ready for use by applying heat sufficient to liquefy it.

Royal Arsenal, Woolwich.

LIGHT, AND ITS WORK IN ABSORPTION.

BY CAPT. W. DE W. ABNEY, R.E., F.R.S.*

BEFORE this candle flame I hold a piece of glass, and you would say that the flame appears violet through it. Why is it violet? Let us consult the spectrum and obtain an answer. I place the glass before the slit of the lamp, and you see that the whole of our band of colour is absent except a band in the red, a faint band in the yellow, and a wide band of blue. Now a mixture of red and blue light gives us the sensation of violet, in the same way that a mixture of all the colours of the spectrum gives us the sensation of white light.

The question now arises, what has become of the yellow and other rays? All radiation, where it falls upon a body, must do one of three things: it must be reflected, transmitted, or absorbed. In the case of the blue glass, the yellow rays have been absorbed, whilst the blue and some of the red are transmitted, and there is a certain amount of surface reflection. When we say *absorbed*, we mean the waves have been quenched, and the energy they carry has been utilized in some way. What has become of the energy? Let us answer this question by another experiment. Here I have a piece of glass coated with common lampblack, and when I place it before the slit you will see that it cuts off nearly all the rays. I think now that I can show you what has become of the energy.

Here I have a glass bulb coated with lampblack and a stem with three bends in it, in which is located coloured liquid. I now cut off by a card all radiations except the visible ones, and the others I collect by a lens and expose the bulb to rays thus collected. The liquid is found down in the stem; in other words, the air inside has expanded, and expansion of the air shows heating.

If I take a mercurial thermometer, and do the same, the same result ensues, the mercury expands, the particles get into more violent motion than is their wont, and they become further separated in consequence. Now then we can tell what has become of the energy; the lampblack has absorbed the radiations, its particles become violently agitated, but only so as to cause radiations of large wave lengths, which are therefore invisible; they communicate their agitation to the particles of the glass, and the glass to the air or mercury. The energy carried by the radiations has been expended in the work of separating the particles of air in one case, and the particles of mercury in the other; the swinging particles in the lamp have communicated their motion to the particles of the air and of the mercury. In other words, we have a *transference from one body to another of the molecular motion which we call heat*.

Now for our violet glass. What becomes of the energy of our radiations in that case? It does not absorb all the radiations, but only part, and the energy conveyed by these arrested waves is transferred to it in the shape of heat, and if exposed long enough to the radiations, the rise in temperature might be sensible to the touch; the touch, remember, depending on the transference of vibration of the heated body to the nerves situated in our epidermis.

We will now place other coloured glasses before the screen, and note the absorption that takes place in them. 1st. We have a red glass, which you will see cuts off all the blue from the spectrum, and leaves the red intact and a slight band of green. If I place the violet glass in front of this again, we should expect that a red band alone should remain, since the red glass absorbs everything that blue allows to pass through except the red of the spectrum. You see this is the case. Here we have a green glass which transmits the green and yellow, but cuts off the blue and most of the red. You will notice that the small amount of red light left occupies a different position to the red which passed through the red or the blue glass. Hence, if we combine all the glasses together, no light should pass through them. Our conjecture, you see, is practically proved: the spectrum entirely disappears, and we have darkness. What has become of the energy of the colour-giving waves radiating from the glowing carbon points which have struck our glasses? They have been doing work in the interior of the glasses, shaking the particles and raising their temperature.

Let us test some coloured liquids, and see whether they likewise absorb. I place the purple potassium permanganate dissolved in water before the slit, and we have thorough proof that absorption is taking place. We see that in the yellow and green we have an immense elimination of colour, and four or five black bands appear in these regions. Again, I will rapidly pass potassium chromate, Spiller's purple, cyanine blue, and other dyes, before the slit, and in every case we have the colours left on the screen which, if combined, would give the colour of the liquid. As before, the absorbed waves do internal work in the liquids, causing a rise in temperature, though so small as to be imperceptible, unless extremely delicate means are taken of showing it.

We have now tested both solids and liquids for absorption, but I would next like to show you the absorption of gases and vapours.

Those gases which we meet with ordinarily in nature are colourless, and any power of absorption that they possess lies in the radiations outside the visible band of colour or spectrum. These radiations we shall not examine, for being invisible they do not come under the head of "light." There are other gases, however, which are more or less intensely coloured, which are to be found in combination in bodies. Such a gas I have here—nitrous acid. If I hold this up to white light, you will see that it is strongly coloured with a brown tint, and hence we may infer that it has the power of cutting off the blue rays. Let us try if this is the case by placing it in the spectrum.

See, the blue rays are cut off, which is what we might have expected. What becomes of the energy carried by these absorbed rays? It is expended, as before, as a heating effect, though unless very great precautions are taken, the small rise in temperature is not apparent. So I might go on and show you the absorption due to other gases, but I should prolong this part of my subject beyond reasonable limits. Now as to vapours, can I show you that these absorb? Were I to take the colourless vapours of such substances as ether and alcohol, I could not show you that they have any appreciable absorption of the visible spectrum, since they, too, are colourless; but I can show you the absorption by metalloidal vapours.

In this large flask I have dropped one or two drops of the liquid metalloidal bromine, and its vapour now fills the flask. It has an orange tint when viewed by white light,

and it ought to behave in a somewhat similar manner to the nitrous acid which we have just now experimented with. Placing it before the slit, we see that it does do so, but the phenomenon is varied if a close scrutiny be made, for the absorption is found to be due to cutting off small lines of light in the blue and the yellow, these lines being equidistant from one another. The general effect, however, is the same as with the nitrous oxide.

In this test-tube I have some iodine, which I will gently warm. The iodine vapour fills the tube, and we see that it is of a purple colour, hardly to be distinguished, in fact, from that of the permanganate of potash solution. I hold it in front of the slit. At first, whilst the vapour is very dense, we have a total, or nearly total, absorption of the yellow and green; but I would have you notice that as the vapour gets less dense, owing to its cooling and depositing in the top of the tube, the band of absorption narrows, first at the top and then at the bottom, until, finally, both the yellow and green are to be seen on the screen. Like bromine, these absorption bands are formed by an innumerable number of fine lines very closely situated together.

It is an interesting experiment to hold these tubes and flasks containing the various gases, vapours, and solutions at a small distance from the screen in the spectrum, and to note the intensity of the shadows they cast when they traverse the part of the spectrum which their contents absorb. Thus we find that the flask of bromine casts no shadow in the red, whereas in the blue the shadow is jet black.

Once more. Let us see the absorption that takes place by a metallic vapour. You are aware that common salt is composed of metallic sodium combined with chlorine. I will take a little of this sodium, and, after separating the carbon points, will place it on the lower one, and we shall see that when vapourized by bringing the carbon points together it likewise exercises an absorption. I can burn this metal because it has a great affinity for oxygen, and the rapidity of combination is such that the temperature of the metallic sodium is raised, and we get the sodium given off as a vapour; not colourless like the metal which I hold here, but of a bright yellow tint. I bring the points together, and the sodium immediately gets volatilized, the glowing points of carbon are surrounded by the yellow sodium vapour, and on the screen we have a wonderful case of absorption. How is this? The flame is yellow, and yet we find that the yellow of the spectrum is cut off. Is not this an apparent contradiction of what has gone before—that a yellow vapour absorbs the yellow. It is not, for this reason: in this case we are dealing with a vapour which itself is *self-luminous, and the rays absorbed by a cold body are always radiated by it when hot.* Let us test this. Here I have a salt of cobalt in solution, which is blue by transmitted light, and therefore cuts off the red. I take a pen and write, with the solution as ink, upon a piece of clean platinum foil, and hold it in this colourless flame. You will note that the marks I have made shine out with a red light on the white hot platinum background; in other words, the cobalt salt, when hot, emits the same light as it absorbs when cold. So with our sodium, its hot vapour absorbs the same rays that it emits, and cold sodium vapour, if it could exist, would still cut off the yellow rays; in fact, it would appear purplish by transmitted light.

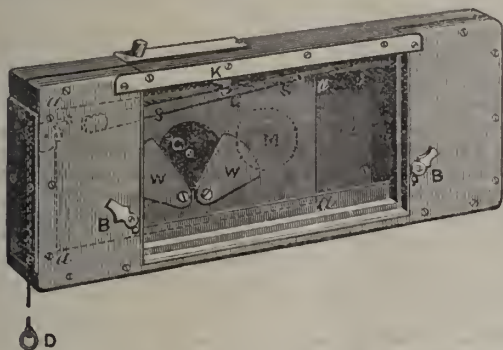
(To be continued.)

COLONEL WORTLEY'S INSTANTANEOUS SHUTTER.

The principle of the instantaneous shutter, which was exhibited at the last meeting of the Society, will be understood by a reference to the accompanying figure.

At the back of the narrow box in which the movable parts are situated is a projecting grooved piece (not shown) which replaces the ordinary camera front. In the opening

of the box is fitted a board which carries the lens in the ordinary manner, and is fastened by B B. The lens occupies a position facing M, which is a circular aperture in the back of the box, and opening into the camera. *aaaa* is a rectangular sheet of brass, in which a circular hole, C, has been drilled (of about the same diameter as M), and provided with two movable wings, W W, by which it



can be more or less closed, the sky in almost every case having less exposure given to it when the apparatus is used. In *aaaa* are two notches into which the ratchet, K, falls, K being raised when required by pressing down the thick pin shown on the top. One of the notches is seen at G, the other is so arranged that when K falls into it C is exactly opposite M, in which position of the brass plate the usual focussing operations can be performed. An india-rubber band, S S (fixed as shown), pulls *aaaa* across the aperture M, when K is released. The string D pulls back the sliding brass plate till K falls into one or other of the notches.—*Photographic Journal*.

Recent Patents.

PORTRAITS BY ARTIFICIAL LIGHT.

BY G. E. ALDER AND J. A. CLARKE.

THE following is the specification of the arrangement for using artificial light for portraiture, known as the Luxograph:—

Our invention has for its object the production of photographs without the aid of daylight, and at times and in places where it would ordinarily be impossible to produce them.

We use any of the well-known actinic artificial lights, such as the electric, magnesium, or pyrotechnic compounds, by preference the pyrotechnic, on account of its not requiring expensive apparatus and machinery. It is well known, however, that unaided artificial light is useless for the production of satisfactory pictures, as rays of light coming from a point are quite unsuitable for the purpose. Our invention enables the operator to produce pictures equal to those taken by ordinary daylight. For this purpose we employ a reflector of suitable size, by preference one about four or five feet in diameter, in conjunction with the said light, and with the reflecting surfaces placed at suitable angles; we prefer to render the rays of light parallel or convergent to a focus. In conjunction with the reflector or otherwise we employ one or more semi-transparent screens placed between the source of light and the object to be photographed, by which means the rays of light are dispersed or diffused equally, and a soft and suitable light obtained for photographic purposes.

Improvements are to be performed by making the reflectors of silvered glass or other reflecting surfaces built up of small pieces, or otherwise formed, and fixed in a curved or other convenient shaped metal or otherwise constructed frame. In front of the reflector and in its centre of focus is placed the light, and in front of the light is placed one or more screens of opal or ground glass, or of papier mineral, tinted or otherwise, or other semi-transparent media of sufficient size to prevent the passage of any rays of light, save through its medium, and thus all rays are dispersed.

In practice we often find it desirable to subdue the principal light by placing a violet or blue tinted glass in front of it.

When either a pyrotechnic composition or magnesium is employed to produce the light a lantern of glass must be used with a chimney to carry off the fumes arising from the burning of the light, and the light supplied with air by suitable inlet.

Having thus declared the nature of our said invention, and the manner in which it is performed, we claim,—

Firstly. One or more screens in conjunction with artificial light for diffusing the rays of said light.

Secondly. One or more suitable reflectors for multiplying rays of artificial light and reflecting them at proper angles, in combination with one or more semi-transparent media for diffusing said rays, all for the purpose of illuminating objects for photographic purposes, all substantially as described and set forth.

Correspondence.

DEATH OF MRS. CAMERON.

DEAR SIR,—Many of your readers will be grieved to hear the announcement of the death of Mrs. Julia Margaret Cameron, who died at Gleucainr, Dikoya, Ceylon, on Sunday last, after a short illness from a cold caught while nursing one of her sons, who had been ill for some time.

Mrs. Cameron's productions when in England are too well known and appreciated to require any comment, and since her residence in Ceylon her camera has been seldom idle; in fact, a more indefatigable lady never existed.

In addition to her artistic skill and taste, Mrs. Cameron was a poetess of no mean order, and her varied accomplishments made her the centre of a highly intellectual circle. Her many excellent qualities endeared her to the hearts of all who knew her, and all who had the honour of her acquaintance recognized her womanly worth, and have offered their tribute of affectionate regard for her memory.

Well do I remember, on first meeting Mrs. Cameron a few days after landing in Ceylon, being struck with the kind, motherly manner in which she gave me a host of useful advice about preserving my health in this tropical climate, irresistibly attracting love and respect.—I remain, yours respectfully,

W. T. WILKINSON.

Colombo, Ceylon, Jan. 30th.

KEEPING PYROXYLINE.

DEAR SIR,—With reference to some remarks which lately appeared in the NEWS on the subject of keeping pyroxyline, I beg to record my experience in that direction.

When in India some years ago, I on two or three occasions obtained pyroxyline from a well-known London firm. They sent it me in stoppered bottles, and it invariably reached me in a state of decomposition,—usually as a pasty mass, with the bottle full of nitrous fumes. I informed the firm which supplied me, thinking that the pyroxyline was perhaps insufficiently washed. Every batch I received, however, arrived in a similar state; so I determined to obtain the acids and make the pyroxyline myself. This I did, and never found that it decomposed in any way. It was kept loosely-wrapped in paper, and placed in a tin box with holes in it. Since then I made several ounces of pyroxyline in England to take out to India, as I had found it difficult to obtain acids of suitable strength in the country. This cotton was taken out to India packed in the manner described; and as I seldom had leisure for photography, the pyroxyline was not used up for three or four years. No decomposition of any kind set in, and during the hot season the thermometer in the house must often have stood at 100°.

I may mention that the pyroxyline I have referred to as having been obtained from London, and also the samples I made in India, were made by Hardwich's formula; that which I made in quantity in England, and kept for three or four years in India, was made by the formula given in the YEAR-BOOK.—Yours faithfully, W. L. NOVERRE, Major.

PYROTECHNIC COMPOUND.

SIR,—The composition formerly in use in the theatres for lighting up ghosts, &c., was as under:—

Nitre	...	...	...	5 ounces
Sulphur	...	...	...	2 "
Antimony	...	...	...	1 ounce

each article pounded in a mortar, well dried, and then mixed. A couple of ounces formed into a cone on a piece of tin or iron, and lit with a match, would give a very intense light. Probably the modern blue fire makers may have improved upon this—or what was formerly known as "Gaudin's Fire," made of

Chlorate potass	...	...	...	6 ounces
Sulphur	...	...	...	1½ "
Sugar	...	...	...	½ "

Yours, &c., THE OLD HAND.

Notes and Queries.

SIR,—Would you kindly answer the following query in your next, and greatly oblige.

"During a sudden thaw in January last, my cellar, in which stood a keg containing about half a cwt. of hypo, was flooded to the depth of some nine inches, the consequence being that the floor was saturated with hypo in solution. The floor is of sound asphalt, but my operating rooms, &c., being just above, I much fear the consequences of the hypo particles being carried upstairs on the soles of boots, or otherwise. Is there any chemical I could wash the floor with effectually, or which I could lay down to combine with the hypo, so that I could remove it in composition; or what course would you recommend?—Yours respectfully, "Q. H."

[Can any of our readers suggest a remedy for this disaster?—Ed.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

"Annual Report, 1879.

"YOUR Council, in reviewing the work of the last year, have every reason to be gratified at the progress that has been made in photography in general. When the list of papers given below is scanned, it will be noticed what varied subjects have been brought before the Society at its meetings, and the information brought out on these occasions has evidently had a most beneficial effect upon the attendance at the meetings. The progress in the science of photography since the last annual meeting has been noticeable, for it will be found that much which has been unexplained before in certain photographic phenomena have been tracked to their origin, and evidence has been adduced that the term "actinic" must be applied to the whole range of the spectrum. A step in the proof that light, radiant heat, and chemical action are simply effects of radiation, and not forces inherent in it, has thus been made, a step which is important in physical science generally. As regards dry-plate processes, more particularly emulsion processes, the Society have had the benefit of the experience and teachings of several members who are entitled to speak with authority, and this is the more noticeable in that the prize which has been offered by Mr. Paget might have been supposed to have temporarily closed the sources of information in such matters. In the matter of permanent printing, the knowledge of the possibility of the fading of carbon prints has been amply discussed, and the conclusion arrived at must, to a very large extent, have satisfied those interested in their production as to their permanence.

"In the improved platinotype process, which was brought before the British Association at Dublin, and subsequently before the Society by the inventor, is to be found another process which, from chemical considerations, must prove valuable for producing pictures which can also be relied upon for permanence. The abolition of hyposulphite of soda and silver from the process, and the sole employment of such indelible matter as platinum black, as the colourant of the images, is a great advance on the original process. The introduction of this amended form of the

platinotype process may be said to be one great feature in the year's advance.

"Your Council have great pleasure in formally recording in their report that the Progress Medal for the greatest advances in the science or art of photography was awarded for the first time during the past year, and that the award was made to Captain Abney, R.E., F.R.S., for his recent researches in photographic science. The Progress Medal differs in many respects from the medals offered at the annual exhibitions, in that some distinct advance must be made before it can be awarded, and in order to make it a prize which should excite the emulation of all workers, your Council consider that it should be withheld until some noticeable advance had been made. The award is still under the consideration of the council.

"During the ensuing year the first triennial examination in photography will be held under the auspices of the Society of Arts, and it is hoped that the small prizes offered to the successful competitors by this Society will aid in furthering the objects which it had in view when it applied to the Society of Arts to hold such examinations. The technical examination will include a theoretical knowledge of the subject which must strongly stimulate honest work in the art-science, and the passing of the examination ought to stamp the examined as having studied his subject in other than a rule-of-thumb manner. Your Council have caused the requirements of the Society of Arts to be inserted in the Journal.

"Your Council have already referred to the prize offered by Mr. Paget in connection with dry plate work, the award of which they have undertaken through a competent committee of the Society. They would desire to express their sense of the munificence of the offer made by Mr. Paget, marking, as it does, the interest which one of their members takes in the advancement of photography. Should the outcome of the competition be to give to the public a process which fulfils the conditions insisted upon, the boon will be no slight one.

"In connection with the Exhibition (which was satisfactory, when the fact is considered that many valued members threw their strength into the Paris Exhibition) your Council have to notice the introduction of an entirely new feature, viz.: the charging for wall space to non-members. The policy of this innovation is evident, when it is taken into consideration that an annual exhibition exists as much for the benefit of the exhibitors as for the art itself. It is, therefore, manifestly right that those who are not members, and yet partake of one of its advantages, should support the Exhibition in some other way. The experiment having been tried, the result has been most satisfactory, and your Society has obtained many additional numbers by a strict adherence to the rules laid down.

"The following analysis of the Exhibition is again recorded, as statistics constitute the base upon which are founded new possibilities in policy and government:—There were 94 exhibitors, comprising 43 members, and 51 non-members. Of the 43 members, 27 were resident in London; 16 in the country. Of the 51 non-members, 20 from London, and 31 from the country. There were 47 London exhibitors, and 47 country exhibitors. 331 frames were hung, containing 897 separate photographs. Of these, 401 were portraits and figure subjects, 422 landscapes and architecture, 33 animals, and 41 miscellaneous. The Russian loan collection and the Cyprus pictures amounted to 851, making a total of 1,743 pictorial works exhibited.

"Your Council with sorrow have to record the death of two distinguished members of the Society, viz., J. A. Spencer, and T. Sopwith, F.R.S., obituary notices of whom will be found at the conclusion of the report.

"The following papers have been read during the past year, and show that a wide range of subjects have been brought for discussion:—'On the Fading of Carbon Prints, and the Suppression of Bichromates in Carbon Printing,' by Dr. D. Van Monckhoven; 'Non-converging Perpendiculars in Architectural Photography,' by Edwin Cocking; 'Remarks on Dr. Monckhoven's Paper,' by W. S. Bird; 'Remarks on Dr. Monckhoven's Paper,' by J. W. Swan; 'Photography at the Least Refrangible End of the Spectrum, and on some Photographic Phenomena,' by Captain Abney, R.E., F.R.S.; 'On Dry Plate Process,' by W. England; 'A Tourist's Preservative Dry Plate Process,' by T. Sebastian Davies, F.C.S.; 'On Alizarine: its Origin, Properties, and Applications,' by J. R. Johnson; 'On the Alleged Fading of Carbon Prints,' by Thomas Bolas, F.C.S.; 'Photographic Notes from a Travel in Russia, with Exhibition of Various Works, Apparatus, and Material,' by Leon Warnerke; 'Photographic Experience in Cyprus,' by John

Thompson, F.R.G.S.; 'A Really Reliable Dry Plate Process,' by Henry Cooper; 'A Case of the Destruction of the Latent Image on Washed Collodion, and its Restoration,' by Leon Warnerke; 'Notes on the Platinotype Process,' by W. Willis, jun.; 'On the Subjective and Objective of Pictorial Photography,' by Edwin Cocking; 'On the Fading of the Undeveloped Photographie Image, and on Soluble Bromide in Emulsions,' by Captain Abney, R.E., F.R.S.; 'On an Instantaneous Shutter,' by Colonel H. Stuart Wortley.

"In conclusion, your Council congratulate your Society upon the work done during the past year, and trust that as the future of our art-science unfolds fresh matter for investigation, all members will avail themselves of the ordinary meetings to discuss new theories or facts in photography."

Obituary.

"JOHN A. SPENCER, born in Lamb's Conduit Street, in 1827, where his father followed the business of a chemist. Educated at University College, he devoted himself to chemical science, studying under Dr. Hofmann. At length succeeded to his father's business, and for the excellence of his chemical preparations was awarded one of the few bronze medals given for that class of manufactures at the Great Exhibition in 1851. Soon after this time he was appointed Demonstrator of Applied Chemistry at the Panopticon, now the Alhambra, in Leicester Square. He seems to have turned his attention to photography about the year 1853, and in 1856 produced for the Arundel Society the illustrations to the late Sir Digby Wyatt's 'Notices of Sculpture in Ivory.' Soon after this Mr. Spencer went into business extensively as a manufacturer of albumenized paper. The care with which this paper was prepared and its freedom from defects soon obtained for it a very large sale, and 'Spencer's Albumenized Paper' acquired a very good position in the market. About 1867 Mr. Spencer commenced the manufacture of carbon tissue, and in the year 1870 joined the Autotype Company. Mr. Spencer retired from the business in January 1877, and but a few months after the promontory symptoms of a very painful disease appeared, which carried him off on the 20th of April, 1878, aged 51. He was interred in the Hammersmith Cemetery. Mr. Spencer was a most excellent chemist, singularly urbane and genial in manner. He was an early member of the Volunteer Corps, and of late years held the rank of Captain in the South Middlesex Regiment. His death at a comparatively early age weakened the ranks of the photographic profession by removing one who possessed a large amount of technical and manipulatory skill, combined with an amount of chemical knowledge consequent upon a very efficient training in early life."

"Mr. THOMAS SOPWITH, M.A., F.R.S., was born at Newcastle in the year 1803. In early life he gave evidence for taste of design and construction, and at first studied architecture. From architecture he passed to the study of mining and railway engineering. In the year 1838 he was appointed Commissioner for the Crown under the Dean Forest Mining Act. At this time he had published a treatise on 'Isometrical Drawing, as applicable to Geological and Mining Plans, Picturesque Delineation, Ornamental Grounds, &c., &c.' Other works published by him were: 'Geological Sections of Holyhead,' 'Hudgill Cross Vein and Silver Band Lead Mines in Alston Moor and Teesdale,' showing the various strata and subterranean operations. He was the inventor of a set of projecting and parallel rulers, for constructing and working plans and drawings in isometrical and other models by projection, and of a most useful levelling staff. Mr. Sopwith, by his representations, &c., was chiefly instrumental in the formation of the Mining Records Office. From 1845 to the year 1871 he was mining engineer at the extensive Lead Mines at Allenheads. He here studied botany, geology, meteorology, and mineralogy. From 1871 he resided chiefly in London, and attended regularly most of the meetings of scientific societies. He was genial, and had great conversational powers. He was a great lover of art, and ever took great interest in photography, both in respect to its scientific and artistic associations. He was colleague of our President as joint referee at the Amateur Photographic Association, and his careful criticism at times of determining the pictures for prizes was most valuable. His diary, extending over 168 beautifully written volumes, contains the principal incidents in his very active and useful life."

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE annual extra meeting of this Society took place in the large room of the Memorial Hall, Albert Square, February 13th, the President (Mr. CHARLES ADIN) in the chair.

The minutes of the previous meeting were read and confirmed, after which

Mr. AMBLES read a paper, "Reminiscences of a Photographic Visit to Germany" (in our next).

Mr. W. J. CHADWICK then read a short communication on "Patents in Connection with Photography by Artificial Light" (see page 98). He also exhibited some portraits taken by artificial light, four of which were done in 1869, by the light of Moule's photogen. One of these apparatus had been sent down for trial at the meeting, but, owing to its late arrival, the experiments were postponed.

A somewhat interesting discussion followed, upon the nature and merits of the different artificial lights, which proved so highly interesting that it was desired another evening should be devoted to the subject, the Secretary being commissioned to arrange an artificial light evening in connection with photography at an early opportunity.

Mr. POLLITT (in fulfilment of his promise at the last meeting) had brought a fine view of the interior of a large drapery establishment in Manchester, which he had taken by aid of the electric light.

A large quantity of landscapes were shown by Mr. Coote, Leigh, Garside, and others, and some very fine portraits by Mr. Gregory; also, a magnificent autotype enlargement was exhibited by Messrs. Hellewell and Sons.

THE SECRETARY said, in order to make the meeting as interesting as possible, he thought something more than a good knife-and-fork tea, to which they had already done justice, would be appreciated. He had, therefore, collected a quantity of pictures and apparatus from various sources.

Mr. WM. BROOKS, of Reigate, had sent two series of subterranean photography (the caves of Reigate); these photographs were taken on gelatine plates by the light of ordinary paraffin lamps. Mr. Brooks also sent several fine enlargements printed from collodio-bromide negatives, which were examined by the members with great interest and admiration.

A novelty in cameras was exhibited by Messrs. W. W. Ronch and Co.

Two very portable cameras, with tripods and lenses complete, by Messrs. J. Fleury Hermagis, of Paris; Messrs. Marion had sent down one of their excellent rolling presses, a pair of Hemery's self-registering printing-frames, and a Cadett's pneumatic shutter; and Messrs. Avery and Co. had forwarded a background of their new material.

Mr. W. J. CHADWICK exhibited a lecturer's complete lantern outfit (with the exception of the oxygen apparatus that had already been before the members on one or two occasions). The lantern was a bi-unial, and though of small size, perfect ventilation was secured. This instrument was mounted upon its packing-box, which was designed with doors to form a table on each side of the lantern, and was supported on one of Messrs. Oakley's adjustable tripods; the screen was supported on a very neat and convenient portable frame supplied by Mr. J. H. Steward; and a portable reading desk and lamp by Mr. Middleton.

After all the photographs and apparatus had been well viewed and examined by the members and their friends (who mustered near upon seventy),

A good collection of transparencies were shown on the large screen by the magic lantern, the manipulation of which was very ably conducted by Mr. G. A. Brooks. After the members' slides had been shown, some very beautiful ones were exhibited which Mr. W. Brooks, of Reigate, had also sent down; these were printed upon collodio-bromide emulsion plates, and their colour, clearness, and general beauty were much appreciated.

A fine collection of Woodbury slides were next shown, concluding with a splendid series representing clouds, water, and shipping, by Mr. Valentine, of Dundee.

A vote of thanks was passed to all who had contributed to so highly an interesting meeting, and at a late hour the proceedings terminated.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting was held at the usual place, The Museum, Queen's Road, Bristol, on Wednesday, February 5th, Mr. RADCLIFFE in the chair.

The minutes having been confirmed,

THE CHAIRMAN exhibited a very complete and well-designed little actinometer, which elicited much interest and favourable comment on its help in carbon printing.

Mr. BIGGS spoke of a peculiar appearance on the surface of carbon paper after printing, and which, after practice, he found was a guide to a certain extent.

Mr. RADCLIFFE endorsed the former speaker's remarks, stating that he had noticed the same appearance.

Mr. BIGGS spoke of his mode of keeping sensitized paper, which was by laying it between sheets of soda blotting-paper; on looking at ready sensitized paper, it seemed as if there were a thin or slight varnish over the surface, which dissolved during use.

Mr. E. BRIGHTMAN then read a paper "On the Causes of Insolubility in Carbon Tissue," which was of a very interesting nature (page 98).

Mr. BIGGS remarked that he feared very few people gave the carbon tissue credit for being as sensitive as it was. He had seen some men preparing it in the twilight, and, after it had been hung to dry, taking it through the light in the least apprehensive manner. He had by experiment proved that carbon tissue was more sensitive to light than sensitized paper. He also considered the keeping properties of it very moderate.

Mr. BRIGHTMAN's experience was that old carbon tissue gave a much more forcible picture than new; it seemed to ripen, as it were.

The CHAIRMAN stated that a man had experimented, and felt sure that such was the case, and, as a consequence, was going to manufacture tissue, and keep it so that it might age, so that anyone would then be able to buy it already matured.

The HON. SECRETARY exhibited a very fine carbon print of Sir Noel Paton's picture, "I wonder who lived in there!" representing a wondering little boy looking into an old helmet. It was the Edinburgh Society's presentation picture, and a copy of which they kindly sent for the Bristol and West of England Association's acceptance.

A vote of thanks, proposed by Mr. Brightman and seconded by Mr. Stevens, was accorded to the Edinburgh Society for kindly sending it.

A vote of thanks to Mr. Brightman for his paper closed the meeting.

Talk in the Studio.

THE PAGET PRIZE.—The dry plates (*in sealed packages*) and the negatives which are to be sent in for this competition on or before March 31st, should be addressed to T. S. Davis, Esq., Secretary to the Award Committee, 5A, Pall Mall East.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The next meeting of this Society will take place at the rooms of the Society of Arts, Adelphi, on Thursday next, March 6th, at eight o'clock, when Mr. R. V. Harman will read a paper on "Artificial Lighting." Mr. F. A. Bridge will say a few words on "Finance," and Messrs. Ayres, Anekorn, and Mr. F. Henry will exhibit some apparatus, &c.

DEATH OF MRS. CAMERON.—We deeply regret to announce the death of Mrs. Cameron, a lady so well-known, and so justly esteemed in Ceylon, and indeed wherever she was known, that the announcement will send a pang of regret into many a household. The deceased lady had accompanied her son, Mr. Harding Cameron, who was ailing, from Kalutara to Glencairn in Dikoya, and was at that time apparently in perfect health, but it is feared a cold paved the way to the attack which proved fatal after a few days' illness, on Sunday last.—*Ceylon Times*, January 30th.

HARD TIMES.—A correspondent writes to us as follows:—"Sir,—Is photography going down? A few years back I was a tyro in the trade, and received a pound a week for doing nothing. Now, I have the ability to do something better, I can not find anything to do.

I have wander'd "Mighty London's" town,
Tramping after work to do;
Have wander'd up and wander'd down,
Tramping after work to do;
Have wander'd "Mighty London" round,
Tramping after work to do;
No "corn," save on my feet, I found,
Tramping after work to do.

A LITTLE PHOTO.

SODIUM HYPOSULPHITE AS A SENSITIVE COMPOUND.—A correspondent, writing to the *Society's Journal*, in one of his letters on the subject of sensitive compounds, says:—"I believe there is a great deal of rubbish talked about fixing and keeping your fixing solutions in the dark, and I do not do so myself. I cannot see what it can matter whether a soluble salt is dissolved away by hyposulphite in the light or in the dark."

In replying to this letter, there was occasion to allude to a fact which is not generally known, viz., that a solution of sodium hyposulphite is sensitive to light. In using this compound in volumetric analysis, it is always necessary to keep it in the dark, since in the light it decomposes with a precipitation of sulphur. By proper means a print may be obtained on paper by this decomposition; of course, more as a curiosity than as being of any real value.

THE MANUFACTURE OF HENS' EGGS.—One of the San Francisco papers gives an account of a new industry that has arisen in that city, namely, the manufacture of hens' eggs from inexpensive materials. The albumen is imitated by a mixture of sulphur, carbon, and fatty matter obtained from the slaughter-houses, and rendered sticky with mucilage. The yolk is made of blood, phosphate of lime, magnesia, muriate of ammonia, oleic and margaric acids, and coloured with chrome-yellow. The shells are shaped by a blow-pipe from a mass of gypsum (plaster of Paris), carbonate of lime, and oxide of iron. After the shells are blown, the albumen is forced in through a hole in the small end, and sticks to the sides; then the yolk is added, and after being covered with more of the albumen mixture the hole is sealed with cement; the complete egg is then "rubbed pretty smooth and laid aside for packing." It is asserted that many barrels of these eggs have been already shipped eastward for consumption; and as a pleasing adjunct to meat from the "slink butcher" they will no doubt be carefully welcomed by British shop-keepers in search of "cheap and nutritious" food.

To Correspondents.

ASTREA.—We do not know anything certain as to the composition of the substance in question. It is probable that your guess is tolerably correct. 2. We have given full instructions for nickel-plating in the *Photographic News*. We are at present from home in pursuit of health, and have not facility to books of reference, nor can we give the date when details appeared in the *News*. It is a few years ago. The solution would not hurt india-rubber; we cannot speak for paint. 3. Probably permanent photographic printing.

M. N.—The stain is beyond a question caused by hypo.

J. W.—We believe the salt is not in commerce. How the patentee prepares it we do not know; and as it is a patented process it is possible that he is not anxious to place facilities for piracy in the way of the public.

A FLOUNDERER.—We hope to give the article very shortly.

ANOTHER L.—We note the extract from the *Daily Telegraph*. So far as we know, the statement is an error; certainly it is as regards the occasion in question being the first introduction of the Luxograph. The writer, probably, thought this was the first occasion, and he thought his personal experience was the measure of the fact.

E. J. SCOTT.—We do not know any precise formula for the use of chlorides to secure warm tones in transparencies, but are familiar with the fact that chlorides are in some cases used for such purposes. The formulae have generally been kept secret. If we wished to produce such results, we should experiment upon the hint. There would be no need to dissolve the chloride in a small quantity of distilled water, as there are several chlorides soluble in alcohol. Try two grains of chloride of strontium to each ounce of bromo-iodized collodion. It will not do any harm to the bath. It may make the collodion a little slower. We can only suggest trying, unless some of our readers who are familiar with such a formula will communicate.

J. T. M.—So far as our experience and opportunity of observation go, developed prints are more permanent than albumenized prints; but they are much less pleasing. Being in the paper instead of on it, most probably contributes to permanency, but it detracts from beauty, giving a dull heavy look to the picture. The blacks are not perfectly black, and the whites rarely purely white.

PHYLO.—We have within the last few months repeatedly given a formula such as you require. You should take the trouble to make a note of such formula when it appears, or to refer back to the numbers of the *News*.

SOUTH DEVON.—We cannot at this moment make a precise reference. So far as our memory serves, an ounce in an ounce of water will make a saturated solution.

R. F. G.—The reason why india-rubber is not a satisfactory mounting material is its instability. It gradually decomposes, and, from being an elastic adhesive substance, it changes into a dry powdery resin. Pictures mounted with it leave the mount, and generally present a discoloured effect. The time it lasts depends on circumstances—perhaps six or eight years.

Several Correspondents in our next.

The Photographic News, March 7, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

HOW TO KEEP PYROXYLINE.—MRS. JULIA MARGARET CAMERON—ARCTIC PHOTOGRAPHS IN THE STUDIO.

How to Keep Pyroxyline.—Major Noverre's experience of photographer's guncotton, communicated in last week's NEWS, is interesting. He tells us that sample after sample sent out to him from England was in a fuming state when he received it in India. We can well believe it, for there are very few samples which, when kept in this country in closed vessels, do not show signs of decomposition after a while. We are speaking, *bien entendu*, of soluble pyroxyline only, and not of the more stable kind known as military guncotton. We fear, indeed, that it is very rarely the case that soluble guncotton is made which will bear sealing up at a temperature of 100° F. without showing signs of red fumes. The war chemist appears to be aware of the fact that soluble guncotton will not keep well, for if he find as much as twelve or fifteen per cent. in his military material, he rejects it as unfit for warlike purposes. Of course, if guncotton for torpedoes and mines could not be stored in magazines, it would be of little value to soldiers or sailors, from the fact that it would never be at hand at the moment it was wanted. Major Noverre says that to prevent the formation of fumes—or, rather, to allow these to escape, and not to exercise injury by their presence—he made it a practice to wrap up his guncotton very loosely in paper, and, moreover, provided the utensil in which it was stored with holes to allow access of air. This, or the immersion of the material in water, which at once preserves it, and, at the same time, renders it inert, is the only means of assuring oneself of the safe keeping of soluble guncotton. One need not, however, wait to see fumes given off to ascertain if incipient decomposition has begun. Long before the fumes are visible to the eye there arises an acid vapour, and this may at once be detected by the application of blue litmus paper. In conclusion, we may say that only the best and most stable guncotton, such as is employed in torpedoes and mines, is permitted in Government magazines, and it must pass a very crucial heat test. This is to place it in a closed vessel, and maintain it at a temperature of 150° F. for no less than a quarter of an hour. Under these severe conditions it must show no sign of acidity upon litmus paper, otherwise it is rejected. It would be impossible, of course, to make use of the same test in proving samples of soluble cotton, since, we believe, hardly a sample that is manufactured would be capable of passing, so that our readers will do well to follow the advice given by Major Noverre or by ourselves, if they desire to preserve their pyroxyline in good condition.

Mrs. Julia Margaret Cameron.—The death of Mrs. Julia Margaret Cameron at Ceylon leaves a blank in the list of artist photographers. Mrs. Cameron's productions were well known, and some of them—to wit, the portraits of Sir John Herschel and the Poet Laureate—were fine examples of camera work. To say that Mrs. Cameron's work was always satisfactory would be more than could be said of any artist; but that it was frequently most praiseworthy, and exerted a beneficial influence upon the disciples of the camera, few will deny. While Mrs. Cameron's detractors complained that the technical part of her work was slovenly done, and that "out-of-focus" constituted her principal motive, there were artists of standing and repute who praised her pictures without stint. If Mrs. Cameron's pictures were not perfect, they exercised an influence that was much wanted. Photographs small and sharp have been so much in vogue, that any efforts to impart more breadth in camera pictures were welcome.

Mr. Robert Crawshaw's prizes did much in the same way to throw the conventional photographer from his track; and although pictures taken direct, larger than life, were not always to be commended, there cannot be a doubt as to the influence of these larger portraits. Mrs. Cameron was an ardent believer in lack of sharpness, and if not universally in the right, she proved very plainly that pleasing pictures were to be produced of an un-sharp character, if we may use the expression, and that sharpness of focus was not, as photographers believed, the acme of photographic work. The fine portrait of Sir John Herschel, whose bold and rugged features were rendered so well by Mrs. Cameron, would have puzzled many a portraitist who went in for microscopic sharpness. In this case the lady did not err, as in some of her portraits she undoubtedly did, in producing blur, which, if carried too far, was obviously quite as much a defect as a painful sharpness in the skin of the model. Mrs. Cameron, too, was honest and straightforward in her art, and spared no pains to produce artistic results. She worked at her models again and again, and created a school of her own. As in the case of Rejlander, her art capacity was far greater than her technical skill; and if either of these had invoked the aid of one well skilled in photographic manipulation, the success of their pictures would have been much greater. In the case of one, as the other, many a fine production suffered from an accidental defect, which was all the more to be deplored because it might have been avoided. An occasional stain from development or the dipping bath, or want of attention in manipulation, whereby the picture was not "cleared up" as it should have been, has caused many a grumble on the part of critics; but these notwithstanding, Mrs. Cameron's photographs made their mark, and are not likely to be forgotten. The lesson they taught is certainly one by which most of us have profited. Mr. W. T. Wilkinson, who was the first to announce to us Mrs. Cameron's death, reminds us that the lady was something more than a worker with the camera. She had made Ceylon her residence for some time past, and since her arrival on the island her camera had never been idle. On Mr. Wilkinson's arrival on the island, she, in a "kind, motherly" fashion, gave him much advice as to the care of his health in the new climate, and generally interested herself in his welfare. No wonder, then, that he says: "In addition to her artistic skill and taste, Mrs. Cameron was a poetess of no mean order, and her varied accomplishments made her the centre of a highly intellectual circle. Her many excellent qualities endeared her to the hearts of all who knew her, and all who had the honour of her acquaintance recognized her womanly worth, and have offered their tribute of affectionate regard for her memory."

Arctic Photographs in the Studio.—Portraits with arctic surroundings are still prevalent on the Continent, and in America, although the charming pictures of Notman, of Montreal, of this nature, have not yet been surpassed. Snow and ice, but especially the former, are difficult things to simulate in the studio: a sheet of rough green glass, if properly set, will appear like a good imitation of ice, and salt may be made to appear like snow. But in America, where these pictures are the most successful, they employ, as a rule, very fine and soft down, which takes the impress of the foot, and has to all appearance the effect of pure driven snow. The soft pictures of Mr. Notman, indicative of a Canadian winter, are, we believe, all produced by the aid of white down of this description, which yields a lighter and softer image than a background of salt. The down, when permitted to settle on a roof, does so with all the characteristics of snow, and produces a charming cornice, such as one sees after a snow storm, when the flakes fall quickly and without drifting.

REMINISCENCES OF A PHOTOGRAPHIC VISIT TO GERMANY.

BY JOHN AMBLER.*

As there was no paper announced to be read this evening, a short account of a visit I paid to Germany in August and September, 1873, with Mr. McLachlan, may not prove uninteresting to the members of this Society.

Doubtless most of you have seen Mr. McLachlan's great group of the Royal Family of England, which is now exhibiting at the Royal Institution in this city. It was in connection with this picture that we went to Germany, as the group includes Her Majesty the Queen, her sons and daughters, and their wives and husbands, as well as some of their children—in all, twenty-two figures. Separate photographs of each of these royal personages had to be taken. A design of the group was, in the first instance, shown to Her Majesty, through the Earl of Derby, and Lord Winmarleigh, with which Her Majesty was greatly pleased. She was the first to be photographed, and then graciously gave Mr. McLachlan letters of introduction to each of her children.

The photographing of these royal personages necessitated visits to Windsor, Balmoral, Osborne, Buckingham, Inverary, Marlborough House, Berlin, Potsdam, Darmstadt, and Seeheim—to Berlin and Potsdam to photograph our Princess Royal and her husband, H.I.H. the Crown Prince of Germany, and their eldest son and daughter; and to Darmstadt and Seeheim to photograph H.R.H. (the late) Princess Alice and her husband, the Grand Duke of Hesse, and their eldest daughter, Princess Victoria. Mr. McLachlan had been to Germany the year previously to photograph some of these members of the Royal Family, but in order to photograph the remaining members this second visit had to be made.

To make a group of twenty-two ordinary individuals is a comparatively easy matter, but a group of twenty-two royal personages is another affair altogether—the former being so easy of access, but in the latter case you had to pass General this, Count that, and Major someone else, just like passing so many sentries. With your permission I will here quote a few words from an article on Mr. McLachlan's picture, which appeared in the *Manchester City News* of January 25th last. The writer says:—

"A great man about the Court at Windsor Castle, with the most kindly intentions, advised Mr. McLachlan to abandon his project. 'You are intent,' he said, 'upon making a group of the Royal Family. Your design is a beautiful one, and I should like to see it carried out; but I wish to save you a world of misery and trouble. The thing is simply impossible. When Prince Albert was living it might have been practicable, for he loved art and artists. When he lived Sir Noel Paton was commissioned to paint a group of nine members of the Royal Family. For two years he worked at Cumberland Lodge, but such was the worry he had in trying to get sittings that it ended in brain fever, and he abandoned the work. Then Mr. Lake Price was commissioned to paint a group, but he caught brain fever from the same cause as Sir Noel Paton, and he abandoned the work. And now you come, and you want to paint a group, not of nine members, but of twenty-two, scattered all over Europe. Do you expect, after the failure of your distinguished predecessors, that you will succeed?'"

With these preliminary remarks I will proceed. As neither Mr. McLachlan nor myself were very conversant with the German language, the best thing to do was to have the apparatus and chemicals as complete and as safely as possible, so that we should have little or nothing to trouble our German chemists for. No expense was spared in this respect. The luggage consisted of five well-made boxes, each divided into compartments, and each compart-

ment lined with thick felt. One box contained eight of Dallmeyer's lenses, including a pair of his 3½ cabinet lenses. Another box contained a 12 by 12 bellows camera, so arranged that by use of the repeating back four cabinet portraits could be taken on a 12 by 10 plate, and four cartes on a 7 by 9 plate. The negative bath solutions were in strong bottles packed in compartments in the centre of the remaining boxes. Although they had to stand the frightful knocking about which they received at the hands of the officials at the different stations during our two months' stay in the Fatherland, we came back without an article broken.

Leaving Dover shortly after eleven one night, after a pleasant sail we arrived at the Belgian port of Ostend about three o'clock in the morning, as day was breaking. Our trouble commenced here; for, through some stupid rule, the officials would not let a studio camera-stand which we had brought accompany us with the rest of our luggage, although we entreated these officials ever so much. No; it must follow by the luggage train! We received it a week afterwards.

Our destination was Seeheim Castle, about twelve miles from Darmstadt, where the late Princess Alice was staying for a few weeks with her children, Prince Louis (the present Grand Duke of Hesse) being in England at the autumn manoeuvres.

Brussels was reached at 7:30 a.m., and as the train for Cologne did not start until 9:30, we had a hasty look round the city; but, before doing so, the "inner man" was attended to by our enjoying a hearty breakfast. On our arrival at Cologne, our luggage had to be overhauled by the Custom House authorities. This was not a difficult matter, as the collodion, &c., in the boxes was easily got at.

The German railway officials are an impudent race, for after having given one of them a substantial "tip" to see the luggage to the train, another fellow pestered us for half-a-crown. Yes! actually named the figure. "What for?" we exclaimed! "For telling the other man to look after the luggage!" was the calm reply. They seem to think that Englishmen are made of money.

As we were in a hurry to get to our destination we had only a ten minutes' glance at Cologne. After leaving the latter city, the railway runs close to the Rhine for many miles until you reach Coblenz, and a charming ride it is. I had heard of the beauties of the Rhine, but its splendour surpassed my expectations. We arrived at Darmstadt at ten o'clock at night thoroughly knocked up, not having had a wink of sleep since leaving Manchester; so we were glad to get to bed at a very comfortable hotel.

The next day we took train for Bickenbach, a village station about twelve miles from Darmstadt. There were only two old men who acted as porters, so it was no easy matter to inform them what we wanted. I, fortunately, had an English-German conversation book in my pocket; so, after glancing at its pages a moment, I managed to make one of the old men understand that we wanted a conveyance to take our luggage to Seeheim Schloss, for he very soon brought an odd-looking cart and horse which carried our luggage to the castle—a distance of three miles—while we walked behind. A terrific thunderstorm raged all the way, so that we were drenched to the skin, as we, unfortunately, had left our umbrellas in the railway carriage at Mayence, where we had to change carriages unexpectedly, and, therefore, hurriedly.

After arranging a few preliminaries, we made the best of our way from the castle to the village hotel at Seeheim. We stayed at this hotel for a few weeks, so you may be sure we had a quiet time of it, we two being the only persons who spoke English. If we wanted to order dinner, the conversation book before mentioned would be opened, and whilst the waiter ran his finger down the German column of dishes, I would run mine down the corresponding English column, and when the name of the desired

* Read before the Manchester Photographic Society.

dish was arrived at, the finger would stop, and I would give the waiter a nod.

During these few weeks, several photographs of the Princess Alice and family were taken. Some may wonder why we should have to stay so long in order to take a few photographs. This is easily understood when one considers the numerous engagements which royalty have, and also when we bear in mind the fact which photographers know too well, viz., the difficulty of getting a certain pose, effect of light, and, above all, a certain expression combined in a photograph. All these effects must be obtained with each figure in order to form one harmonious group, when the combination of photographs came to be put together, from which composition the black and white oil painting had to be made.

Her Highness had only a few months previously received a most severe shock by the death of her beautiful boy, Prince Fritz, whom she accidentally let fall through the window of the palace at Darmstadt. This will account for the sorrowful expression Her Highness has in the group.

One evening we took train from Bickenbach to Darmstadt for a bottle of distilled water, and after obtaining the precious article at the chemist's, we made our way back to the railway station; but discovered that the porter had told us the wrong time the last train left for Bickenbach—it had gone! As we had an appointment with Her Highness for the next morning, we were compelled to get back somehow; so we hired a carriage and pair (if you want to drive at anything like a decent speed in Germany it is no use having only one horse in your conveyance). It was then ten o'clock, so speed was a necessity, or we should find it a difficult matter to obtain admittance to our village hotel. It was after midnight, however, ere we reached our destination, having travelled through a "forest: deep and gloomy" for several miles, the driver walking in front with the lamp to guide the way, as it was very dark, and the road exceedingly bad. Before we could arouse our host we had to ring a big bell in front of the hotel for some time, making an awful din. The bottle of water cost about 18s.

(To be continued.)

PHOTO-TYPOGRAPHY.

BY CAPT. J. WATERHOUSE, B.SC.*

THE object of the photo-typographic processes is to obtain a surface block by photographic agency, that may be set up with type in the same way as woodcut, stereotyped, or electrotyped blocks, and be printed in the ordinary printing press. The process offers great advantages in the rapidity with which the blocks may be made and printed off in large numbers. Up to the present time no entirely satisfactory method has been discovered for printing subjects in half-tones in this way, though Mr. Duncan Dallas has produced some very promising results. The processes are, therefore, almost entirely limited to the reproduction of subjects in line or dot alone. The operations in this branch of photographic reproduction are based upon exactly the same principles as the photo-engraving processes just considered, and in some of them the only difference is the substitution of a positive cliché for a negative, or *vice versa*.

The existing processes may be divided into three classes. 1st. Those in which a mould is made from a relief in swollen gelatine. 2nd. Those in which the image is obtained in asphaltum or gelatine on a metal plate and bitten in. 3rd. Those in which an image in a waxy and resinous ink is obtained by the methods described under the head of photo-zincography, then transferred to a metal plate and bitten in.

Moulding Processes.—Of the first class several methods

have been introduced from time to time, but they are all on the same principle, and are modifications of Pretsch's and Poitevin's processes already described, differing, as a rule, merely in technicalities which, being trade secrets, have not been fully published.

The following method is a typical one. A glass plate or other suitable surface is coated with a mixture of gelatine and bichromate of potash, and, when dry, exposed to light under a negative. After this, it is immersed in cold water till the parts unaltered by the light, which represent the whites of the original drawing, swell up to the required height, leaving the lines quite sunk. The plate is then removed from the water and, the superfluous moisture having been carefully blotted off, is ready to have a cast made from it.

This may be done in two ways: first, by metallising the gelatine surface, either by means of plumbago or bronze powder, or by reducing silver upon it by applying a solution of nitrate of silver followed by treatment with a solution of pyrogallie acid, or of phosphorus in bisulphide of carbon. The gelatine relief then receives a thin deposit of copper in the usual way. The thin copper electrotype is backed up with type metal, planed, and mounted on a wooden block, so as to be of the height of type. This method gives the finest results, but takes time.

The second method is to take a cast of the gelatine relief in type-metal. A cast in plaster, wax, &c., must first be taken from the gelatine, a second cast in plaster is made from this, and then stereotyped in the usual manner. This method is quicker than the last, but the results are coarser.

These processes are now largely used for illustrations in books and newspapers, but, so far as I know, have not been regularly applied to the reproduction of maps.

Etching Processes.—The processes in the second class, in which a metal plate on which the image has been obtained on a sensitive coating of asphaltum or gelatine is bitten in with an etching liquid, though capable of giving very perfect result, are not, I believe, so much used as the other methods which are quicker and more simple.

A photographic image is impressed from a reversed negative on a copper or zinc plate prepared as in the Berlin engraving process already described, and, after development with olive oil and turpentine, is bitten in so as to yield an image in sufficiently high relief for surface printing, the precaution being taken of protecting the finest parts of the work, as soon as they are sufficiently bitten, by covering them with stopping-out varnish.

If the sensitive surface is chromated gelatine, the soluble gelatine may be removed, or not, but the etching fluid must be such that it will not dissolve or remove the gelatine from the surface of the plate—solutions of perchloride of iron, bichloride of platinum, nitrate of silver in alcohol, bichromate of ammonia in dilute sulphuric acid, are some of the most suitable mordants for the purpose. In any case, the full amount of relief cannot be obtained by biting through the gelatine at one operation. After the first biting-in the gelatine film must be removed, and the lines protected from the further action of the etching fluid.

Gillotage.—The last class, in which a photographic transfer in resinous ink is made on a metal plate, and then bitten in, comprises the simplest and most largely used of these processes.

The process generally employed is substantially the same as Gillot's "paniconography," now commonly called Gillotage, which is largely used for illustrated papers and various other purposes.

A polished zinc plate, which has been strongly varnished at the back to protect it from the acid in the subsequent operations, receives a transfer in greasy ink, either from an engraved copper plate, a lithographic drawing on paper, or a photo-transfer print prepared as for photozineography.

* Journal of the Asiatic Society of Bengal.

The plate is then etched in the usual way and rolled up with a varnish ink containing a large proportion of resinous matter; it is then dusted with powdered resin, which sticks to the lines, and renders them more capable of resisting the acid, the superfluous resin is brushed off, and the plate is gently heated.

The edges of the plate and the large white spaces are covered with shellac varnish, and when the varnish is thoroughly dry, the plate is plunged into a trough containing very weak dilute nitric acid, kept in constant motion, and is left until the finest parts are sufficiently bitten, which generally takes about a quarter of an hour; it is then taken out of the trough, washed, dried, and placed on a sort of grating over a charcoal fire. Under the influence of the heat, the coating of ink and resin on the lines, being gently softened, flows down and protects the sides of the hollows formed by the first biting, filling up the spaces where the lines are very close. As soon as this effect is produced the plate is allowed to cool, and then inked with a lithographic roller, as if a proof was going to be pulled. It is again dusted with powdered resin, and is then ready for a second biting in, which is to attack the parts somewhat lighter, and therefore may be effected with stronger acid.

The operations of inking, dusting with resin, heating, and biting with acid are repeated several times till the plate presents only a uniform black colour. Then the plate is bitten with strong dilute acid, which bites out the parts to be left completely white. The large whites, which have been covered all along with a strong shellac varnish, are then cut out with a saw, and the plate is ready to be mounted on a wooden or leaden block for printing. These plates usually require considerable touching up to take off the ragged edges of the lines caused by the spreading of the ink, though this may also be done by repeating the inking and biting in, so as to remove the steps formed by the successive bitings.

This process has been applied at the Imprimerie Nationale, Paris, for producing large geological maps, but the special precautions that had to be taken in "overlying" the plates in the press so as to print properly were very tedious, and must have largely increased the expense and lessened the use of the process. Messrs. Yves and Barret, of Paris, are said to use it largely for reproducing maps and engineers' plans, &c.

(To be continued.)

ON THE FADING OF PHOTOGRAPHS AND ITS REMEDY.

BY A. HESLER.*

A SHORT time ago I was looking over a lot of my old photographs that were printed eighteen and twenty years ago; some were in albums, others laid away in bundles among clothing, and in trunks and drawers, and was I surprised at their remarkable preservation, the deep blacks and half-tones being as clear and perfect as when first made; whereas some of a quite recent date showed unmistakable signs of yellow fading. Upon investigating the matter, I find that the old perfect prints were toned with platinum and gold (two parts platinum to one of gold), and cleared in fresh hypo, made fresh each day. The washing was done as follows: The rose of a common sprinkling-pot was attached to the hydrant-faucet that was placed over the sink; under this a large sheet of double-thick glass was placed, on which the sheets of prints were placed (at that time we did not trim cards or cabinet cards until after washing and drying), the water let on which fell in a gentle shower over the entire surface. While this was going on, a broad bristle brush was passed gently over each side of the print, which was then passed to a tray of clean water. Thus in twenty minutes to

half an hour, twenty to forty sheets of prints were passed through four to six changes of water, and ready to hang up and dry. I believe this, for all prints larger than cards, to be the most thorough and rapid way of washing prints; only for the brush I would substitute a roller similar to that used by the printers for inking type (unless hot water is used, the same composition used by printers would answer very well); or at the rubber stores, a piece of small, thick, rubber hose could be got, through which a hard, round stick could be crowded, and a frame attached. This can be handled in one hand while the prints are changed with the other. Now while this thorough and short washing had its good effect, I believe the permanence of the prints more due to the platinum toning than anything else. I used it at the time because I thought it improved the tones of the pictures, but am now satisfied it has the good effect of preventing fading. At that time the chloride of platinum was not kept by the dealers, and I had to make it for my own use, and supplied it to a few, who thought it of advantage to use it. The metal dissolves in *aqua regia*, the same as gold, but much slower, and requires some considerable heat to dissolve, but otherwise treat the same as gold.

LIGHT, AND ITS WORK IN ABSORPTION.

BY CAPT. W. DE W. ABNEY, R.E., F.R.S.*

HAVING now dwelt upon the absorption by certain bodies, and seen that the carried energy is converted into heat, we will now turn our attention to cases of absorption in which the energy conveyed by radiation does another form of work.

Let me show you a preliminary experiment. I have in this cell some slightly acidified water, and in it I place the ends of two wires, one of which is connected with the zinc, and the other is ready to be connected with the platinum, which are immersed in this jar of acid. You see the magnified image of the cell and its contents on the screen. I now touch the platinum with the wire, and you see we have a shower of gas given off at each wire. If I collected these gases, I should find them to be oxygen and hydrogen, the components of water, the heat of the recombination of which, being directed on a lime cylinder, furnishes one source of light for the lantern. Here we have a something doing work of another form—splitting up a liquid into its chemical components. This class of work we call chemical action. We should find that in order to do this work in our glass cell, work was being performed in the jar—that a certain quantity of zinc was being eaten away to form sulphate of zinc to enable this work to be performed. In other words, the energy called into play by chemical action in the jar was carried along by a something in the wires (which, be it remarked, remain unchanged) to cause chemical action in the water. That something in the wires we have strong evidence is the same medium which we have already spoken about, and the transmission of energy is caused by a wave motion in it. To produce our electric light, we have a similar consumption of zinc, but in this case, instead of chemical action taking place, we have the energy carried along the wires doing work in heating the particles of the ends of the carbon rods.

Now, ordinary radiation, in some instances, can do the same class of work. I have here a plate which is coated with collodion containing bromide of silver—a molecule of which is a combination of two atoms of bromine with two atoms of silver. Note the colour—it is a yellowish tint by transmitted light; hence it ought to absorb the blue and violet. You will see that it does to a certain extent when I place it in the spectrum. Now, one atom of bromine is not in the same way knit to the atoms of silver in the molecule as are the others. One is more loosely com-

* *Practical Photographer.*

* Continued from page 104.

bined than the other, probably being more distant from the whole than the other. This atom might therefore be shaken off if proper force were applied. A boy pulling at the rope of a bell, if he only pulls at proper intervals of time, will be able to swing the bell, all the small applications of force being collected together as its swings. So with our wave of light, the continuous application of the energy of certain of the waves is able to cause the whole molecule of silver bromide to swing about so violently that the loose atom is thrown off from it, more particularly if we suppose that part of the energy is expended in giving an internal motion to the molecule. This becomes perceptible to the eye by change of colour after a time, though it takes place on some of the molecules with a very short impact. In this plate, part of which has been exposed for a short time to the light, you will see that the colour is changed.

I will now demonstrate to you that the change takes place with a short impact which is altogether imperceptible to the eye. Behind this etching on glass I have placed a plate covered with silver bromide, and expose the latter through the former to the blue rays of the spectrum. I now shield the lamp with red glass, which is permissible, since the red rays pass through the film and can do no work on it, and place the plate in a cell containing a reducing agent, which more readily reduces to the metallic state the silver bromide acted upon by light than it does the bromide, which has been shielded from it. I throw the outline of the plate on the screen, and you note the image appearing. The dark parts which appear are those which have been acted upon by light, whilst the parts which remain of the original colour are those which have not been exposed to the light, which the bromide absorbs.

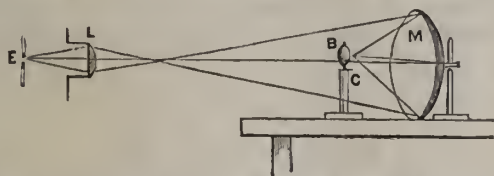
This, then, is the rationale of photographic processes. It is simply the transference of energy carried by the light radiated or reflected from any object to perform chemical work in the molecules of the silver compound. I dissolve away all the unaltered bromide, and show the picture on the screen.

The same silver compound may also be produced of a different colour. Here we have it in its blue state. It now absorbs both red and yellow, and the radiations producing these colours must evidently do some kind of work. They produce the same effect as the other colours—that is, these radiations produce chemical decomposition.

I might show you, if I had time, many other compounds which absorb light, and which are acted upon in the same manner. For instance, this solution of ferric oxalate is easily acted upon, and carbonic anhydride is liberated.

Another very striking experiment is one in which we cause the union of two gases by the action of radiation. In this thin glass bulb we have two gases enclosed, viz., hydrogen and chlorine. The former is colourless, the latter is of a green tint, as its very name indicates. Equal volumes of these gases can combine to form hydrochloric acid, and the combination is effected with explosive force if intense light fall on them when they are mixed together in the right proportions, as they are in this bulb.

We can cause a sufficient intensity of light by the following arrangement:—E is the electric wire, L the lens of the lantern, B the glass bulb containing the gases held in the clamp C, M a silvered mirror held on a stand of short focus, into which B is inserted. We find the focus



by using a strip of paper, cover up the lens L, and put B *in situ*. In the front, L, I hold red glass, and uncover it, and you see that the bulb with its gases remains there in perfect quietude. I re-cover the lens, substitute a piece of

blue glass, and again uncover the lens, and we have a terrific report, and the glass of B shivered into a thousand pieces. The hydrogen and chlorine molecules have been so swung together by the blue radiations that they combine with the result we saw and heard.

Here we have two coloured stuffs which have been exposed to light, and you see how they have been changed simply by light and nothing else; and in all cases without exception, I may say, the change has been effected by the rays of light absorbed.

Here we have abundant proof, then, that energy from a luminous body and carried by the radiation may be expended as the work known as chemical action. The expenditure as heat is a separation of molecule from molecule, whilst that as chemical action is a disintegration or integration of the molecules themselves.

I will demonstrate to you how rapidly this chemical action can be produced. This is a photograph of the spark of an electric machine taken by its own light. The length of that spark was four inches, and on the plate it was three inches. Its passage is exceedingly rapid; so rapid, indeed, that it is with the greatest difficulty that it can be measured; it probably jumped between the poles in about 1-6,000th of a second. The spark itself may be looked on as a ball of heated atmosphere about 1-100th of an inch in diameter, passing at this rate across the interval, and the passage of the image of this ball across the portion of the plate on which it impresses itself is only illuminated about 1-2,600,000th of a second; yet in that short interval of time a succession of 270,000,000 blue waves have impinged on the plate, which have been more than sufficient to effect the chemical change on some of the molecules. The energy conveyed by the radiation from the spark was large; that is, the waves were of great amplitude, by which I mean that, taking the simile of a sea wave, the difference of level between the trough and the crest must have been much greater than would be the case of the blue light radiated from our electric light.

These coloured stuffs which I have shown you as being altered by radiation are examples illustrating a phenomenon in which every one possesses an interest. The bleaching produced, and the rapidity with which chemical change can be produced, as exemplified by that spark photograph, teach us a lesson in regard to vision. Within the eye we have a dyed tissue of a purple colour, which bleaches by the action of light. How rapidly it completely bleaches we do not know, but that it commences to bleach instantaneously we may well believe. In the eye we have a lens which forms the image on this dyed tissue, and we see the image because of the partial bleaching of this tissue. When we shut our eyes, go into darkness, or alter the position of the image, the tissue re-dyes itself automatically, and is ready to receive another image. Vision is therefore a truly photographic process, and is produced by the energy in the waves performing the work of chemical decomposition.

We have now shown you how the energy carried by light is absorbed, and I would, before I conclude, like to show you how the natural colour of bodies is dependent on absorption.

I hold up the red cover of this book in the spectrum, and pass it through it. See, it is beautifully illuminated in the red, and it becomes black in the rest of the spectrum. Here I have a bouquet of flowers which I pass through the spectrum, and we see how the different colours are gradually illuminated, and darkened. Mark how the red flowers spring out in the red part of the spectrum, and appear black in the blue, whilst the blue flowers spring into visibility in the blue, and become dark in the yellow and red.

The white camelia which we have, takes the hue of the colour in which it is placed, and changes like a chameleon, and yet it is white.

(To be continued.)

The Photographic News.

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PRESERVING SENSITIVE PAPER.—AN EFFICIENT METHOD.

THERE is no object to the silver printer of greater importance, perhaps, than the preservation of albumenized paper in good condition for a considerable time after it has been made sensitive. That the thing is possible, is proved by the fact that there is in the market for sale commercially ready sensitized albumenized paper of good quality; but this is probably too costly for the purposes of professional photographers. Many formulae have been published for conferring keeping powers upon the sensitized paper, and many of these have been confessedly efficient; but there have been drawbacks which deprived them of much of their value. The early method of using a chloride of calcium case seems to have passed quite out of use. Here the preservative agency appeared to have been an atmosphere of chlorine, which slowly converted the free nitrate into chloride of silver. The free nitrate is manifestly the deteriorating agent, but paper containing chloride of silver only prints slowly, and the image lacks vigour. Paper which had long been kept in the chloride of calcium box rarely gave satisfactory prints, hence it fell into disuse.

The favourite agent in preserving sensitive paper of late years has been citric acid applied in some form, being either added to the silver bath, or applied in a separate solution. That it possesses valuable preservative qualities cannot be doubted, but it presents the inconvenient drawback of materially interfering with the process of toning the print. It almost invariably makes the toning slow and tedious, and sometimes almost impossible. This is a fatal objection to any method, as anything which interferes with the perfection of toning is out of the pale of acceptance. There are two communications in our recently-issued YEAR-BOOK, both giving new methods of applying citric acid as a preservative, and both strongly commended by intelligent and trustworthy correspondents.

We are now about to describe another method recently communicated to us by Mr. Valentine Blanchard, who has for some time tested it in his own practice with the most complete success. The paper treated keeps in perfect condition, he states, for some weeks, and there is no difficulty or imperfection in the toning whatever. Those to whom he has communicated his method privately, fully confirm his experience; hence, we believe, we confer on our readers a boon of considerable value in publishing the details. The silver bath is made at the outset a little stronger than usual. Mr. Blanchard's usual strength was forty grains of nitrate of silver to the ounce of water. Now he uses fifty grains of the silver salt. To this he adds of a

saturated solution of citric acid in water, ten drops to each ounce of nitrate of silver used. The result is a deposit of citrate of silver in the solution. He now adds to the silver bath, nitric acid, drop by drop, until all the citrate of silver which had been thrown down is re-dissolved. This constitutes the printing bath ready for use. The paper is floated as usual, and, after the usual draining, is laid flat, and blotted off before it is hung up to dry. The paper so treated keeps well, prints well, and tones well, being, in fact, in no wise injured by the citric acid, whilst gaining so immensely in keeping qualities. The rich depth and fine tone of Mr. Blanchard's large prints—produced chiefly from thin negatives—are well known to most photographers.

"I do not profess to theorize on the subject," Mr. Blanchard remarked, on communicating the method in question; "I merely state the facts based on well-tested experience." These facts are really of more interest to practical photographers than a thousand ingenious and perfectly congruous and consistent theories. It may be interesting, however, to glance for a moment at what occurs. The solution of nitrate of silver, when first mixed, is manifestly neutral, or even slightly on the alkaline side of neutrality; if it were not so, the precipitate of citrate of silver would not be formed on adding citric acid. It is a fact worth noting that the nitrate of silver now in commerce is almost invariably neutral, whilst at one time, a few years ago, it generally contained free nitric acid. On adding nitric acid to the solution, in which a precipitate of citrate of silver is present, the precipitate is dissolved, nitrate of silver being formed, and citric acid set free. Hence the solution consists simply of nitrate of silver in solution with free citric acid present. In this state it seems to possess the preservative quality required, without exercising the detrimental action on the toning operation. But there is another important fact to note. Mr. Blanchard removes the excess of free silver solution commonly left on the paper and regarded by many as essential to vigorous prints. In the two communications in our recent YEAR-BOOK, to which we have referred, both Mr. Willis and Mr. Colquhoun lay stress upon a similar operation; they also remove the excess of silver solution. Now we have little hesitation in saying that the keeping qualities of the paper would be greatly improved by this removal of silver solution, even without the addition of citric acid. That the free nitrate of silver is the chief cause of the discolouration of the paper, we think there can be little doubt. But that when it is removed an important element of vigour in the print is removed also, is matter of equally little doubt. To meet this difficulty the citric is present, and supplies an important element of printing vigour. In our early experiments with collodio-chloride of silver printing we met with a difficulty, the solution of which is illustrative here. We obtained vigour in printing on paper by using an emulsion with free nitrate of silver. In working with the same emulsion on opal glass, the free nitrate crystallized on the film, and eventually the image was covered with pinholes. In this emergency Mr. Swan and Mr. Bovey, nearly simultaneously, suggested the use of citric acid in the collodio-chloride. This at once met the difficulty: vigour and depth were obtained without free nitrate of silver.

Perhaps it may be desirable to add, that we have not heard of cases of failure with the method first published in these pages some years ago. We refer to the use of blotting-paper saturated with a solution of carbonate of soda. This is a simple method still practised by many, and generally, we believe, with success.

NOTES AND QUERIES.

ONE of the primary aims of photographic journals has been to afford a means of inter-communication between photographers for the purpose of exchanging ideas and information. In the early volumes of the PHOTOGRAPHIC

NEWS, besides the publication of articles, papers, reports, news, correspondence, and answers to correspondents, a space was devoted to "Notes and Queries," in which difficulties and abnormal experiences could be stated, and answers and explanations offered by any whose experience aided in the solution of such difficulties. This department was often of great value, and, by the courtesy of many experienced correspondents, the Editor was relieved of the duty of answering many querists in the column devoted to that purpose. In process of time, as the art fell very much into beaten tracks, and in the absence of essentially new processes prompting enquiries, this department fell out of use, and eventually even the heading was withdrawn, letters containing subjects for discussion being published under the heading of "Correspondence," and queries answered by the Editor in "Answers to Correspondents."

It has recently been suggested by some esteemed readers that the revival of this column would at the present time be very opportune and useful. Novelties in photography are rife at present. There are many new processes of great importance demanding attention; and novices greatly need the aid of their more experienced brethren in combating difficulties arising in practice. In emulsion photography, for instance, which promises to supersede—at least, to a great extent—the wet collodion process, novel points are continually arising, which the interchange of experience alone can satisfactorily settle. And still more frequently there are difficulties which beset the novice, which only the courtesy of their more experienced brethren can help them in. There will be no lack of querists, we know; and we believe we may trust to the generous instincts of a large body of able photographers to supply information on this and many other points requiring elucidation at the present time.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY IN THE DEPARTMENT OF THE MINISTER OF THE INTERIOR OF FRANCE—ART RENDERED MECHANICAL BY PHOTOGRAPHY—PHOTOGRAPHIC PAPER AND THE COMMERCIAL TREATIES—GENERAL NEWS.

Photography in the Ministry of the Interior.—The officials of the various Government Departments in France are rather celebrated for the tenacity with which they adhere to routine. Lately, however, in several instances, praiseworthy attempts have been made to abolish the old and time-honoured red-tape, and to take advantage of modern discovery to effect improvements in the service of the State. The most recent example has occurred in the Department of the Ministry of the Interior, where the postal and telegraphic services, which are so much behind those of other countries, and more especially those of England, are about to undergo modifications quite necessary to enable them to meet existing requirements. It is by no means surprising that in this path of progress photography should hold a prominent place. The PHOTOGRAPHIC NEWS has already had occasion to chronicle what has been effected at the Bank of France as regards new applications of photography; and I have now just heard of another important improvement that has been carried out in the organization of another public office; this is the establishment of a photographic studio in connection with the Department of Cross-Roads. Up to the present, the road-map of France has been from necessity most incomplete, but now the following plan has been adopted for remedying this great inconvenience. It is well known that excellent maps exist in the Staff office of the War Department, and it was thought that they might well serve for the groundwork of the proposed map, but, unfortunately, they have been drawn up solely for military purposes; besides which, the War Office does not recognise officially the designs and transactions of the Department of Roads, which is a branch of the Home

Office. The two departments, therefore, had to be moved, and induced to render each other mutual assistance—not by any means so easy in practice as might be thought. Photography, however, which has already cut so many Gordian knots, was equal to the task of severing the present entanglement. The map of the military staff had been drawn on a scale of 1 : 800 000, which does not easily admit of the reduction and corrections necessary in the case of maps intended for Civil purposes. By means, however, of the newly-established photographic department, a map can be produced of any required dimensions; this is then handed over to the draughtsman and engraver. The whole map, when completed, will be in sheets, and these are distributed among the different road-surveyors in the provinces, who will enter on them all the changes that have taken place in the surface of the country—where new roads have been made, where old ones have been closed, or where woods have been cut down. What the military surveyors have not done, because it was not their business, will be carried out, thanks to its special opportunities, by a Civil department of the State. In this way the map of France, which was so defective at the time of the war, and which in some cases was the cause of military disaster, will become a trophy equal in merit to the one raised by the German military engineers. This, then, is another point saved by photography in the service of the State, in addition to all the others that it has already secured. I have recently had occasion to pay a visit to this newly-established photographic department, and I am glad to be able to give a highly favourable report of its organization and management. It is under the direction of an able and intelligent man, who devotes all his energies and talent to the fulfilment of duties that must continually increase in importance. There are still a few trivial difficulties that have to be overcome, due to the punctiliousness of the military staff, which is very jealous of its powers, and does not like its functions to be in any way interfered with. But these prejudices, it is to be hoped, will soon be conquered.

Spurious Oil-Paintings Reproduced by Photography.—Under certain circumstances photography may with advantage be employed as an auxiliary of the fine arts; but there are others where all true artists would resent its intervention as an intrusion. Among the latter must be classed some pictures that have recently been produced by painting in oil on the back of photographs rendered transparent by means of Canada balsam, or some such method; these photographs are then passed through the press, and are thus made to resemble oil-paintings. Some speculators are busy exhibiting these pictures in Paris in the hopes of getting up a company for their manufacture and sale on a large scale. Pictures thus reproduced by photography are to be palmed off especially for the decoration of churches, and thus a mechanical imitation of Rubens or Van Dyck, Titian or Raphael, will take its place as an ecclesiastical altar-piece. Good-bye, then, to all the tradition of art, to all enthusiasm for the old masters, to all encouragement of living artists, if such forgeries as these are to prevail. Photography would be degraded in such a service, and deserve nothing but condemnation. In reproducing what it beholds, or as the handmaiden of art, photography can render great services; but if it be employed in supporting mechanical frauds, in imposing upon ignorance, or in promoting bad taste, it will be scouted by all who possess a love for the beautiful.

Photography and the Treaties of Commerce.—The photographic public is being seriously disturbed by the discussion on the commercial treaties, more especially as regards the terms on which paper will be allowed to enter France. At present we are supplied with albumenized paper from Germany and Austria, which is eagerly sought for on account of its excellent quality; but the paper itself is all manufactured here at Rives, near Grenoble. When, therefore, it comes back to us coated with

albumen, it crosses the frontier for the second time. The new protective tariff will be much more severe, and will have the necessary consequence of raising the prices of all kinds of paper used in photography. It is, therefore, now proposed to meet the difficulty by establishing a manufactory in France for the albumenization of these papers. This ought to possess as good laying powers here as anywhere else; and even if that should not be found to be the case, the newly-discovered processes of obtaining albumen will easily enable us to overcome such an obstacle. This project of carrying out completely in France the manufacture of albumenized paper, and thus rendering ourselves independent of foreigners, meets with the approval of all our photographers, especially at the present time, when the new protectionist laws threaten to still further augment the inconvenience of our situation, already rendered sufficiently annoying by the fact that paper manufactured in France is sent abroad, and then returned burdened with double duties.

Miscellaneous News.—The disagreement between the owners of certain photographic processes denominated "extra rapid" causes a considerable amount of amusement to a numerous class of persons who have purchased the licence for working the said processes. M. Boissonas, as he has already stated in the PHOTOGRAPHIC NEWS, has dissolved his partnership with M. Klary, and it is probably in consequence of this difference that the latter gentleman is about to establish himself at Paris, where, according to general report, he has taken the house of M. Bertall, a large photographic establishment near the Madeleine. Apropos of the so-called extra-rapid or lightning processes, and the fuss that is being made about them, it may not be out of place to point out that an Englishman, Colonel Stuart Wortley, was the first, in February 1863, to recommend the use of copper acetate in the developer; that skilful photographer, M. Klassen, has recently recalled this fact to our recollection.

In my last letter I mentioned the process of M. Germeuil-Bonnaud for photographing in colours. A joint stock company has just been formed for working this process.

As regards new books relating to our art, I have to mention the publication of *L'Annuaire Photographique* for 1879, of M. Fabre, which makes its appearance rather late; and a work just sent to press to be edited by M. Gauthier-Villars under the title *La Photographie et l'Archéologie*. Judging by the name, we shall have a most interesting book.

A NEW TONING PROCESS FOR LANTERN SLIDES AND TRANSPARENCIES.

BY WILLIAM BROOKES.

BEFORE the lantern season closes, I wish to describe a system of toning lantern slides and transparencies whereby any tone that may be desired is easily obtainable. It is a process that I have worked for the past twelve months, so I have had some little experience with it. It is one of those processes, like many others, in which totally different effects are produced by using the chemicals employed in a somewhat different manner; and I have not introduced into the process any new chemicals, but simply those which have been known to photographers for many years past.

Some may not altogether agree with me in calling it a new toning process, but I think I am fully justified in so doing, as I produce results that have hitherto not been obtained, although the same toning agent has been employed. I consider the method I am about to describe a most valuable one, and I do not think any one will fail to understand it so as to work it successfully.

As this article is intended more as a treatise for the production of magic lantern slides of the highest class, I will first state the class of transparency that is requisite for the purpose, as I have no doubt that many will read this who have never made a magic lantern slide, and may be tempted

to do so if I make everything as plain as possible, which I will endeavour to do.

A good slide must possess the following qualities when examined: the deep shadows must be intense (that is, only the extreme shadows), not necessarily opaque; the high lights of the picture must be *bare* glass; and all the gradations from high light to deep shade intervening; and when the slide, before it is mounted, is laid down on a piece of white paper (film side downwards) it almost has the appearance of a print—rather duller. Should the high lights appear foggy, it is sure to have a foggy appearance on the screen; should the class of slide in question be of an intense kind, it may be rectified, as will be seen further on; but should it be of a thin and weak character, it is best not to waste time over it, but make another.

I have often wondered why the manufacturers of lantern slides do not make their slides of different intensity, suitable for both oil and lime light; for it is a well-known fact that a slide that gives a good image with an oil lamp is perfectly useless for lime light; and, on the other hand, the slide that is suitable for the lime light gives a very dark, heavy image with the oil lamp. I have found in practice, that should a slide be found too weak, if the lens on the lantern is an ordinary portrait combination, furnished with Waterhouse diaphragms, by inserting one of the stops it sharpens the image, and, at the same time, reduces the light. I have seen slides treated in this way that have left nothing to be desired. I think this system, where practicable, better than lowering the light. Unless the slides are of the character named, the best results must not be expected. It is an old adage that what is worth doing at all, is worth doing well; and I am sure it can be applied to all photographic productions.

The system that I adopt is the collodion washed emulsion process. I find it best to use an emulsion containing only a bromide; an iodide must be avoided. I have occasionally used an emulsion containing a chloride, but, on the whole, I prefer the one containing a bromide only. For lantern slides it is well not to have the emulsion too thick; a little thinner emulsion than for ordinary negative work is best, but the coating of the plate must not be hurried. By using it thinner than usual, a finer result (for this class of work) is obtained for transparencies for window decorations, &c.; where a more intense image is required, it can be used thicker with advantage.

I use the best polished flatted crown glass of medium substance, rejecting all the thick pieces. I soak them in a dilute solution of mucic acid—which ever is at hand: either sulphuric, nitric, or hydrochloric acid—using about one ounce of acid to the pint of water. I allow them to remain in this solution for about half an hour, and then well stream each one separately under the tap, and polish with a little methylated spirit and chamois leather. To prevent the film from slipping, edge with a solution of india-rubber in benzole, about one eighth of an inch all round. To save time, the plates need be polished on one side only. They are coated with the emulsion as with ordinary collodion, taking care not to hurry this operation, especially in cold weather. The plates are then set to dry, and will be ready for use in an hour or two at an ordinary temperature of 60°.

I must not omit to mention that a plate coated with a preservative is unsuitable for this process, it being difficult to tone.

It is very seldom the negatives from which slides have to be made are of the right size to permit of the transparency being made by contact. If it can be done (in the case where only one or two slides are required) it is the most expeditious method of proceeding. If the negatives are large, the only way is to copy them in the camera; if the original negative is of moderate intensity, ordinary daylight diffused by a piece of ground glass answers every purpose. Should the negative be very intense, nothing but strong sunlight diffused by ground glass is of any use whatever.

(To be continued.)

SNOW SCENES.

MR. F. L. MORRILL, a correspondent of our excellent St. Louis contemporary, describes his experience in producing snow effects in portraiture. He says:—

"In the first place, the snow on the ground we make of 'coarse-fine' salt, bought by the bag of (say) 150 pounds, and spread upon an old background removed from its frame, and laid upon the carpet. It being painted, the salt will not sift through, and when you have done with it, take the ground by the edges and roll the salt to the middle, and with the help of your assistant lift it into a box for that purpose, made with a handle on each side, and carry into the accessory room out of the way, all of which is done in a minute's time, and the room is clear for sitting.

"In the next place, the snow on the coat, cap, accessories, &c., is the 'snow' sold by Mr. Seavey, the celebrated background painter, and is nothing more or less than the minute round bits of paper resulting from the manufacture of perforated paper. It is light, and by holding a handful above your subject, and sifting upon him, it will catch in the wrinkles of drapery, and very much resemble the genuine article. It has the advantage of being very clean, and can be very quickly brushed off, and for the drapery of ladies' dress nothing can be better.

"The falling snow we produce with a tooth-brush and India ink. Rub up a little in a 'slaut,' and laying your negative upon a bench in such a way that when you hold your brush over it, and lightly rub across it a bit of wire the spatters will fly on the plate obliquely, which will give a direction to the storm, and also elongate the flakes a little; and, by the way, the negative must be top towards you, in order that the flakes will be made to appear as if falling instead of ascending. Of course a few trials on a piece of white paper first will show you in just what direction to make the flakes fly, and also how thick the ink must be, in order not to have it run on the plate, and not have it fly in a mass, but in minute spots. The finer ones will represent the falling snow at some distance, and the larger ones nearer."

THE PLEASURES OF PHOTOGRAPHY.

[An American comic journal, the *New York Puck*, has the following scene in a photographic studio.]

He came into the studio with his wife on his arm, expectorated, and informed the artist that he wished to be "taken." "Naathin' fancy," he exclaimed, "jess somethin' plain an' quiet, to show the folks at home. I allow you kin get our measure, eh?" The artist thought he could. "How long 'll it take?" he inquired. "Reckon an hour 'll fetch it, eh?" He was informed that ten minutes' exposure would be amply sufficient. He looked grave. "I didn't calculate," he said, "on no particular exposure. There aint naathin' off-coloured about this business, is there? Ye see, I've been once to the theayter sense I come here, an' I don't wish to risk my hold on grace by no unnecessary indulgence in vanities. This is a city of sin, ye know; an' I ain't going to let Satan get the pull on Isr'el Pettenhooper. I'm a deacon in the Smithfield Corners Brick Church, 'n I guess I know on which side the bread of salvation's buttered." Mr. Pettenhooper was informed that it was not he but the plate that required exposure; at which Mrs. Pettenhooper expressed herself much relieved. Then Mrs. P. proceeded to disembarass herself of her bonnet, which she did with some reluctance. The bonnet had evidently been in Mrs. Pettenhooper's family a long time, and probably dated from somewhere about the era of the French Revolution; for Pettenhooper's umbrella, an obvious octogenarian, was apparently some years the bonnet's junior. While this operation was going on, Mr. Pettenhooper drew the artist aside, and nobosomed himself in a corner. "I want you to understand," he began, "jess what

my idee is. My wife 'n' me, we don't want naathin' fancy, ez I said. We're plain people, 'n' jess about as godly ez they run at Smithfield Corners. So you see we want to git somethin' subdooel an' kind-r appropriat. We don't want no such things ez them I see downstairs—them in tights an' spangles, 'n' other unholiness. Mebbe," he went on meditatively, "mebbe I might want to come back, alone by myself, pussonally, for somethin' in that line. I presume you wouldn't tax me too high if I was to take a shine to a picture in tights? I s'pose it's the fashionable keerd?" Then, after reflecting a moment, and probably trying to raise the picture before his mind's eye, he added, with much animation—"Don't ye say naathin' to the old woman, though. She ain't got no sympathy with worldly idees. But gald ding it, I say, a man's got to hev his fling some time ruther, ain't he?" By this time Mrs. Pettenhooper was ready for the camera, and active operations were commenced. Considerable difficulty attended the artist's efforts to "brace up his sitter with the iron frame peculiar to photographers and the Spanish Inquisition. Mrs. Pettenhooper resented the intrusion of an iron thumb in the small of her back, and stigmatised the instrument as "immodest." However, ten minutes of artistic agony produced a ferrotype of the deaconess. Then the trouble began. The artist came out of the darkroom, smiling and cheerful, with the plate in his hand. He showed it to Mrs. Pettenhooper. She asked in chilling tones—"Who is it?" This was a wet-blanket on the artist's professional enthusiasm. But he had no cause to complain of frigid moisture, for he found himself in hot water inside of two minutes. "Do you mean to say," was the indignant query of Mrs. Pettenhooper, "that I look like that? That thing? Why, 'tain't no more like me than 'tis like you. I don't believe you've took me at all. I believe, as I'm a Christen'u woman, that you've taken some of them bareface'd creatures I see down in the showcase at the door instead of me. That me? An' you call yourself a photographer. I don't see how you've got the cheek to look me in the face, after libelin' it like that!" "I don't see but what it kinder fetches you, Mari," interposed Mr. Pettenhooper. "You don't? Pettenhooper, do you mean to tell me that that thing resembles the gal you used to sit on the fence with and make love to?" "Waal," responded her spouse reflectively, "come to think on it, I don't b'lieve it does. But," he added, in a confidential aside to the photographer, "No sir, that ain't the sort of thing I used to sit on the fence with, you bet. But the ole woman ain't held on to her youth like—like I hev." "I might touch it up to make it more like you," suggested the bulldozed artist. "You might!" was the reply he got from his sitter. And he did. He took it into the dark-room and touched it up. The result was a shade more satisfactory; but still Mrs. Pettenhooper refused to recognise her lineaments. She admitted, however, that it looked something like her grandmother; and the artist, somewhat encouraged, went away and touched it up again. The fourth touching-up proved satisfactory to Mrs. Pettenhooper, and she acknowledged that he had "somehow kinder caught the likeness," and added that photography was a wonderful art. Pettenhooper took his turn next, and when he got his ferrotype he wanted to fight. "What do you call that blame machine?" he yelled. "That's a camera," said the trembling artist. "Camera, is it? Well, that there camera is a hurnin' infidel, iniquitous, unreliable, one-horse slanderer. What do you call a thing like that?" he thundered, turning to his wife. Mrs. Pettenhooper beamed with delight. "Why, if 'tain't's like you ez one pea is to another. Pettenhooper, I'd know you anywhere from this." "Oh, you would, would ye! Mrs. Pettenhooper, if yu ever go to identifiyin' me with that picture, I'll let a divorce court loose on ye. I'll go on a square old Talmage tear; I will, by gum!" "Perhaps I'd better touch it up," suggested the photographer. "No, sir, I don't want no touchin' up. Give me my umbrella and lemme go away from this deu of sin and iniquity." But he was told that ferrotypes always looked

that way at first, owing to the iron in their composition, and he finally consented to wait. It took six touchings up to bring Pottenhooper's portrait up to his ideal of manly beauty; but he was finally satisfied, though Mrs. Pottenhooper remarked that he was awful vain for a man of his age and a deacon in the church, and that the last picture was a piece of brazen flattery. Pottenhooper did not view it in that light, and he left the studio with a smile on his face, and the ferrotypes in his pocket. And as he passed out he whispered in the artist's ear:—"Mebbe I will come back, some mornin' when the ole woman's out shoppin', an' try a picter with tights and spangles. A man's got to hev some swing, ef he is a deacon in the church."

Notes and Queries.

SPILLING HYPOSULPHITE OF SODA.

Your correspondent "Q. H." in "Notes and Queries" column, February 28th, should have the floor of his cellar thoroughly cleaned with water; after which, it will be easy to treat it chemically by pouring thereon a mixture composed of—

Muriatic acid	...	...	...	1 part
Water	...	...	...	3 parts

The soda hyposulphite will then be converted into sulphur, sulphurous acid, and common salt, which may be easily swilled off.

As asphalt floors vary somewhat in their composition, it will be as well to operate on a part of it, to see whether the sulphur precipitated adheres to the asphalt in a way that might be considered objectionable.

PHOTO-CHEMISTS.

DEAR SIR,—In answer to your correspondent respecting the hypo. disaster. The best remedy to overcome the consequences of going further is to well wash the floor of operating room, and asphalt over with a pint of glacial acetic acid in a pail of water—three times; when this is done, well wash again with plain water twelve times. You will find the substance of hypo. will all be out.—Yours respectfully,

W. J. ANCKORN.

62, Westminster Road, S.E., Feb. 28th.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The monthly meeting of this Association was held on the 27th ult., at the Free Library, William Brown Street, Mr. THOMAS CLARKE in the chair.

The minutes of the previous meeting were read and confirmed.

The Secretary reported that the Associated Soirees had been a great success, and that another would probably be held at the close of the present year.

Messrs. H. Maycock and William Gorst were elected members.

The Secretary read a communication from Mr. H. Houlgrave, on "Some Experiments with the Gelatine Process" (in our next). In illustration of this paper a dozen stereoscopic transparencies were handed round, and were much admired for their softness and excellence. It was stated that these had been produced with about half an-ounce of emulsion, costing not quite threepence.

Mr. H. A. WHARMBY exhibited some charming portraits from gelatine dry-plate negatives. These had been produced in from two to five seconds in the studio, under conditions which with a bath plate would have been impossible.

The Rev. H. J. PALMER said he was glad to see gelatine dry plates were now being taken advantage of by the profession. He had that afternoon had a visit from a friend who was just going to New Zealand. He was desirous of taking his portrait, and though it was 4:30 p.m. he was successful with a London gelatine plate.

Mr. J. H. F. ELLERBECK exhibited some beautiful lantern slides of what are known as "pendulum curves." These were produced by the needle working on glass prepared by first rubbing over with wax (nearly polishing it off again) and then holding it over the flame of a piece of burning camphor—or, as Mr. Chadwick suggests in his "Magic Lantern Manual," turpentine will answer the same purpose. A perfectly opaque surface is the result, and the lines made by the needle are beautifully fine.

The members were reminded that the portrait album was not

yet full, and it was suggested that each member should be obliged to present his portrait for the album.

The meeting was then adjourned till the 27th inst.

PHOTOGRAPHIC SOCIETY OF FRANCE.

THE first meeting of the new year was held on the 10th January last. M. DAVANNE President of the Executive Council, in the chair.

After balloting for the admission of members proposed at the previous meeting, and the nomination of new ones, a letter was read from M. Henri Carliez, engraver, of Deville, near Rouen, describing a possible method of transferring to any required distance an image obtained in the camera, with all the gradation of tones and half-tints, by means of an instrument similar to that used for the transmission of sound. From an ordinary photographic negative a carbon positive or a print in gelatine can be taken, which will give an image in relief. By interposing between the carbon paper and the negative a stippled plate—a plate that is covered with dots placed at regular intervals, but more or less dispersed according to the character of detail in the image—and exposing to the light for some time, an image would be obtained formed of points or dots more or less deep, according to the intensity of the parts of the negative through which the light had passed. The author's suggestion is, that by a simple mechanism a pin may be made to pass over these points, and by means of a membrane to repeat their gradation in the same way as Edison's phonograph repeats the indentations which the sound vibrations have imprinted on the sheet of tinfoil. For receiving the image the machinery employed would be exactly similar, and the vibrations of the pin could be transmitted to a distance by means of Bell's telephone.

After M. PECTOR (who officiated as Secretary in place of M. Perrot de Chaumeux) had read a number of extracts from the foreign and home journals, the President submitted to the Society a Directory published by the Photographie Society of Vienna. This Directory—as yet complete only as far as the letter M—contains the names of all the photographers of the world arranged under towns, and the towns in alphabetical order. Any person consulting the work is requested to point out the errors and omissions he may happen to discover. It is much to be desired that the example set in this respect by the Vienna Society may be followed by the photographic societies of other countries. The arrangement of such a list, whose importance can scarcely be overrated, would then be much facilitated.

M. ROUSSELOU, Chairman of the Committee of Arrangement of the Photographic Section of the late International Exhibition, informed the members of the Society who had exhibited there that the Committee, having closed the accounts, were in the pleasant position of being able to return twenty-five per cent. of the amount paid in advance by each exhibitor. So soon as the accounts were completely made up, a full balance sheet of the receipts and expenditure would be issued.

A communication on the use of collodion coloured with the tincture of orcanet or alkanet for retouching negatives was made by M. LAMY, and an experimental demonstration of the process given before the Society. Full details of the process and of the preparation of this stained collodion will be found in our French Correspondence, at page 31 of our issue of the 17th January last. M. Lamy claims for this method the advantage that it affords an easy means of improving negatives which are either too weak or too intense. With good portrait negatives treated in this way he asserts that the effects of light and shade on the face may be increased or diminished, and the details of light-coloured clothes and of the hair rendered more distinct. In the case of negatives of landscape photographs, the different planes of the picture can be separated, and the effects of excessive high lights can be softened.

M. STEBBING suggested a theory for the cause of the spots which so often are found on plates prepared with collodion-bromide emulsion. These spots or striæ are in the form of horizontal lines, fine at first, but widening as they proceed, and ending in the broad flat curves like glass drops. They are due, according to M. Stebbing, to the moisture of the atmosphere and he therefore recommends that emulsion plates should always be prepared in a perfectly dry place.

A report of the Committee of the Society appointed to investigate the different emulsion processes on the gelatine-bromide plates of M. Garein, of Lyons, was read by M. Ferrier. He exhibited some positive prints obtained by contact, and a negative taken in the camera, which showed that these plates were able to give very good results. As to their sensitiveness compared with that of other processes, the committee could express no decided

opinion, in consequence of the bad light with which they were obliged to carry out their experiments.

M. CH. CROS showed an instrument of his invention, which he names a chromometer. It consists essentially of a box blackened inside, in which are placed three glass plates parallel to one another, at an angle of 45° with the front of the box. Facing these are three openings furnished with slits for holding glass troughs containing standard coloured solutions. These are a red solution of cobalt chloride, to which some potassium sulphocyanide is added; a yellow one of neutral potassium chromate; a blue one of copper nitrate. When a double trough of each of these coloured solutions is placed before each of the three openings, and all are equally illuminated, the effect produced by the combination of the three reflections on looking downwards on the glass plate is that of white light. If the red aperture be masked by an opaque screen, there are only two reflections combined, the blue and the yellow, and the effect produced is that of a less brilliant white. If the yellow aperture be masked, the tint produced is still white, but tinged with violet; and if the blue aperture be masked, it will be tinged with orange. Next, instead of using double troughs of the same coloured solution, let them be employed in pairs—that is to say, in one aperture a trough of the yellow, and another of the blue solution; in the second, the blue and the red; and in the third, the red and the yellow, so that only green, violet, and orange light are respectively transmitted. The effect when all the apertures are open will be, as before, that of white light, but when the opaque screens are used the appearances are completely altered. When the green light is stopped, the colour of the ground is a pure carmine; with the violet suppressed, a pure yellow is seen; and when the screen is placed before the orange aperture, a pure blue is produced; all these pure colours being the same as those seen in the trichromatic spectrum when a black bar on a white ground is viewed through a prism. M. CROS has also applied his chromometer to the examination of photographs taken by light transmitted through coloured media. Thin negatives reproduced from the same coloured picture are taken through a green, a second through a violet, and a third through an orange medium—the media being obtained by combining, as above, two and two, the three standard solutions in flat glass troughs. Black positives were then taken from these negatives, and placed one in each opening of the instrument, and a combination of troughs of the same kind as that which served to stain the light for each negative respectively placed in front of it. When the reflections from the three glass plates were viewed in combination, and the light properly regulated, the effect produced was exactly that of the coloured picture from which the three negatives were taken.

PHOTOGRAPHIC SOCIETY OF BERLIN.

At the meeting of the 2nd January last, Herr H. JOOP read a paper on "Some Innovations in the Carbon Process." He commenced by observing that the word *innovations* had not been chosen by him, and hardly expressed the intention of his communication, for although some of the manipulations he desired to bring before the notice of the meeting had never yet been published, they were not exactly quite novel. Pigment or carbon paper, he remarked, could be purchased comparatively cheap and of good quality. Care should be taken that the negative employed be of sufficient intensity, for a carbon positive copies rather softer than one on albumen; also that the chromate bath be of the proper strength. A strong solution of chromate (five per cent. and upwards) gives a weak picture, while a dilute one of about two per cent. has the contrary effect. By correctly estimating the bath, therefore, serviceable prints can be obtained from a hard or weak negative. Attention should also be paid to the desiccation, as a paper that has been dried rapidly gives a harder picture than one dried slowly; though the latter is more sensitive, protracted desiccation would increase the sensitiveness by about two-thirds. For transferring the film to the glass plate the author had tried the plan of Herr DUBY, the principal feature of which consisted in immersing the paper, after exposure, in a weak solution of shellac in alcohol, but had found that the water retained by the paper soon rendered the shellac solution milky, and spoiled it. He preferred coating the glass plate with a varnish of—

Oil of turpentine	...	...	...	4 parts
Gum dammar	...	...	...	1 part

which was allowed to dry for twelve hours. Water was then poured on this plate, and the carbon paper, after having been dipped for a short time in cold water, placed film downwards upon it, and thoroughly squeezed in every direction. By this

method the formation of bubbles is avoided. Another defect, that of reticulation, which often occurs in the parts where shadows and lights are sharply divided, is done, in the opinion of the author, to the gelatine film tearing on its upper surface, in consequence of these portions that have been less acted on by light swelling up more quickly than the others. This may be corrected by performing the first operation of washing as quickly as possible, so as to allow the gelatine no time to swell up. In developing, only moderately warm water must first be used, and hotter water only after the paper has been completely immersed in the bath. For developing carbon prints Herr JOOP uses an apparatus of his own devising; this consists of a rectangular trough 86 c.m. by 70 c.m., with deal sides 15 c.m. deep, and a double bottom, the lower one of iron, the upper one of zinc plate. It is heated by an atmospheric gas stove, oval in shape, placed underneath the iron plate. As regards the different kinds of paper that he uses for obtaining carbon negatives, he observed that the English paper No. 107 gave the best results; it possessed a steel-grey tint, and gave more intense copies than the red-brown paper A5 of Braun. In the discussion which ensued,

Herr E. DUBY expressed the opinion that copying in direct sunlight after a weak chromate bath was not reliable, as it was difficult to attain the desired intensity. Slow desiccation, he believed, would certainly heighten the sensitiveness, but had the disadvantage of rendering the paper less durable. As regards the shellac process, which he had introduced, he thought the author of the paper must be labouring under an error, as he had always recommended a thorough squeezing of the paper on to the glass before immersing it in the shellac solution, so that it retained but very little water, and the shellac solution would remain good a long while. In conclusion, Herr DUBY drew attention to a very sensitive paper manufactured by Dr. VAN MONCKHOVEN, which was sold under the name of "Papier special pour climats chauds et pour agrandissements."

Herr CARL SUCK had found that the English carbon paper 107 could not be used for negatives, as it soon fades and turns of a greenish-grey colour.

Herr DUBY believed that this greenish tint was due to progressive decomposition of the chromic salt in consequence of insufficient washing.

Herr H. JOOP considered a paper tinted with cochineal to be quite useless for transparent pictures. For retouching he had used a mixture of burnt carmine, burnt sienna, a little neutral colour, and some lampblack, which he thought could be employed with advantage as a pigment for gelatine films.

At the meeting of the January 16, Herr C. BRASCH in the chair, Dr. F. STOLZE read a paper on his "Photographic Experiences in Persia." After an exhaustive account of the country, its geographical and climatic relations, and a short sketch of the work of the expedition for the observation of the transit of Venus, he entered fully into the difficulties he had met with as a photographer in the course of his journey. With more than three hundred emulsion plates he obtained very poor results, as the orange yellow glass of his transfer box proved to be no protection against the intensity of a Persian sun. Dry plates also, whether prepared with coffee, tea, or beer, proved also unsatisfactory, so that he had to fall back on the wet process. For this purpose he used a box which served the double purpose of a receptacle for chemicals, but its limited dimensions, the want of water and a dark tent, and the insupportable heat, compelled him to cut short his stay in it. On this account the plates, immediately after being developed, were coated with a concentrated solution of sugar, and the washing and fixing put off till later. In obtaining the necessary chemicals, he met with incredible difficulties—for example, a collodion procured from Bombay proved to be a model of worthlessness. According to the opinion of the speaker, English dealers send out to India only those articles that cannot elsewhere be got rid of. Either it was quite impossible to procure, for the bottles on their arrival, notwithstanding the most careful packing, were sure to be nine-tenths empty; but as Dr. Stolze on one occasion had sent to him sulphuric acid in place of the sulphuric ether which he had ordered, he was able, by means of an ingenious arrangement, and with the help of the arrack of the country, to make for himself the required substance. After much trouble he procured, by the agency of a compatriot, some lunar caustic and raw collodion, from which he was able to prepare good collodion emulsion, and thus to obtain some most successful views of the ruins of Persepolis. Dr. Stolze increased the interest of his paper by the exhibition of a number of prints from negatives taken in Persia.

Herr E. DUBY showed a number of carbon negatives taken on paper of various kinds, and corroborated the views of Herr H. Joop, expressed at the former meeting, as to the superior fitness of the English paper 107 for taking carbon negatives.

Herr C. BRASCH laid before the meeting a number of eueaustic photographs, which were highly approved. He stated that this kind of photograph for the decoration of table porcelain is beginning to obtain a wide distribution.

Herr Th. JOOP introduced to the notice of the Society a new pneumatic holder of iron for plates of a large size—more than a square metre in area. The ingenuity of the construction of this instrument was universally recognized, but doubts were expressed whether its price (50 marks) would not prevent its general adoption. Herr H. Joop has also constructed a plate-holder, much cheaper in price, which he promised to exhibit at the next meeting of the Society.

Talk in the Studio

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The next meeting of this Society will take place on Tuesday next, March 11th, at the Gallery, 5, Pall Mall East, when Mr. C. Beuett will read a paper on "Gelatine Emulsion." Mr. W. Wainwright, Jun. (Woking) will exhibit gelatine plates, with some remarks; and Col. Wortley will exhibit samples of pyroxyline washed in ammonia.

THE LUXOGRAPH.—A letter from Messrs. Alder and Clarke, whilst thanking us for our article of last week, takes occasion to state that the pyrotechnic compound they use is not the same as that which was employed by Mr. Moule, but one of their own, giving a more intense light, and consequent shorter exposure; the time for a cabinet head with Dallmeyer's No. 2 B, second size stop, being from 13 to 15 seconds. They take exception to the term "huge" as applied to their reflector, which is 4 feet 3 inches in diameter.

ALLEGED PIRACY OF WORKS OF ART.—At Brighton a photographer, named John Patrick Conroy, was brought up on a warrant charging him with having infringed the copyright of certain works of art, the property of Mr. Henry Graves, the well-known fine art publisher of Pall Mall, London. The first charge was of infringing the copyright of Frith's celebrated picture of "The Railway Station," which, with the steel-plate engraving, &c., was purchased by Mr. Graves at a cost of £16,000. So long as ten years ago a photographer, named Singleton, was employed by a tradesman, named Greig, in Guernsey, to produce a negative from an engraving of the painting, which negative subsequently passed into the prisoner's hands by purchase, and three photographs, measuring about 12 in. by 8 in., were shown in Court as having been taken from it. It was explained to the Bench that prisoner was liable to a penalty of £10 for every pirated copy, but it was preferred to take the case under the Small Penalties Act, so that prisoner might be made liable to be committed to prison. Prisoner's reply to the charge was that the photographs were produced in Guernsey, to which island the Copyright Act did not extend; and eventually a remand was granted, it being understood that the other charges, including the pirating of the "Pair of Nutcrackers," "The Good Shepherd," "On Foreign Service," and other well-known pictures, would ultimately be gone into.

THE LATE MRS. CAMERON.—The *Times*, referring to the special loss to a social circle by the lamented death of this lady, says:—"Mrs. Cameron appealed to a still wider public by her perfectly original and unique photographic work and subject pictures, in which, after a daring fashion of her own, forfeiting the sharpness of definition which ordinary photographers strive for, and which is one of the things artists most dislike in photographic portraiture, and having the advantage of sitters usually distinguished for intellectual gifts or personal graces, she produced a series of heads and groups quite unique in their suggestiveness, the most picture-like photographs certainly which have been given to the world, and some of them among the best extant portraits of their distinguished originals, which included, among a host of other notables, the Poet Laureate, Sir Henry Taylor, Sir John Herschel, Herr Joachim, Mr. Spedding, and the Rev. Mr. Brookfield. Mrs. Cameron's singular ardour of enthusiasm, the energy with which she flung herself into whatever she undertook, her rare forgetfulness of self and readiness to help others, endeared her to a wide circle of friends, while her devotion to her family was for her a love which nothing ever diminished—not even her departure for a distant island, whither her affection for her children carried her at a time of life when the

long journey and the difficulties and discomforts of forming a new home would to most women have been insurmountable. Brought back to this country last year by the impaired health of her venerable and distinguished husband, who survives her, she bore the journey with her usual hardihood and spirit, and her friends were delighted to find all her old force and freshness of character and temperament undiminished."

To Correspondents.

NORTHUMBERLAND.—The chief object of immersing the gelatine in methylated spirit is to remove all the water. Absolute alcohol will of course answer, but the same spirit will not serve for repeated use. It may be re-distilled to get rid of the water it absorbs. 2. In distilling water, a lead pipe may be used for conveying water to the still. The caution you have seen is against the use of a lead pipe for the worm of the still. This should be of copper or brass.

M. H. W.—The spots are, we think, due to imperfect fixation, but produced in a way often little suspected. It is caused by the formation of small air-bells on the print, which protect the spot from the perfect action of the hypo. The circular nature of the spots indicates this as a source. The stains caused by imperfect fixation are never visible until some hours afterward, when light and moisture have caused the decomposition of the insoluble hyposulphite of silver formed. The cold weather would conduce to this result. Warning the fixing solution is very desirable in cold weather. Hyposulphite is not likely to deteriorate whilst kept in crystals.

NELLIE.—The yellow circular stains in your prints are precisely similar to those of "M. H. W." Read the answer given to him above. Watch the prints when placed in the fixing bath, and remove air-bells which form on their surface. It is a good thing to keep the prints moving in the fixing bath, lifting each individual print, and placing it again in the bath. This removes air-bells, and prevents the prints sticking together, which is a frequent cause of imperfect fixation. We shall always have pleasure in giving NELLIE advice, so she need not hesitate to ask.

B. HEYNE.—The power of reducing the intensity of parts of the negative would, of course, be useful, if it could be easily and safely done. But you write as if you had already communicated to us your method. There is a mistake somewhere, as we have not had any letter from you before this in which you ask if it would be wise to advertise your method.

TONED COLLODION TRANSFERS.—Your letter raises a question which has often occurred to our own mind, but has never been discussed, nor, so far as we know, any evil results been noted. When toning a collodion transparency, the chlorine liberated from the deposited gold will, undoubtedly, form chloride of silver by combining with the silver forming the image. But all this, you must remember, is in the dark parts of the picture, and if this chloride blackened under the action of light, it would only intensify the image. You speak of the light becoming discoloured. As the whites are simply clear collodion, containing no silver, they cannot darken from this cause. If they darken at all, it is from some other cause. Some samples of spongy collodion require much washing to clear them of anything in which they have been immersed, and possibly traces of the gold solution, or even of the previous hypo solution, remain, and subsequently cause discolouration. If traces of the fixing solution remain in the film, the whites will sometimes discolour during toning. Prints which have a good colour after developing, without toning, often have a buried smoky looking image. Varnishing will remove this.

R. G. D.—Gelatine which dissolves in cold water is bad, and should not be used for photographic purposes. A special test of gelatine or glue is that it should swell in cold water, but not dissolve without heat.

J. R. H. will find several articles giving instructions for producing rapid dry plates in our last and preceding volumes, also in our **YEAR-BOOKS**. We cannot repeat complete processes in this column, nor, indeed, in any column, when they already exist for ready reference. Justice to regular readers forbids such a plan of occupying our space. There are several articles on the subject in our **YEAR-BOOK** just issued. See page 38, where Mr. Henry Cooper gives very full instructions for an excellent process.

A. K. H.—You will find, we think, that diluting your collodion with a little of a thin undiluted sample will remove the difficulty. **PARIS.**—The gentleman to whom you refer has not specifically given up photography; but some short time ago a very severe domestic grief caused him to withdraw himself considerably from professional life. We do not feel at liberty to publish an address which might, by any possibility, submit him to intrusion. Our correspondent will readily understand this. Under other circumstances, he was courteously accessible.

Several correspondents in our next.

The Photographic News, March 14, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.
TRAVELLERS AND DRY-PLATE PHOTOGRAPHY—THE DIRECTORY OF THE PHOTOGRAPHIC SOCIETY OF VIENNA—JOURNALS ILLUSTRATED BY PHOTOGRAPHY.

Travellers and Dry Plate Photography.—It would be well, indeed, if travellers could derive more benefit from the improvements that are taking place in dry plate photography. It is no longer a novelty to employ dry plates in the studio in preference to wet ones. Several of our correspondents have now been employing gelatine emulsion plates in the studio for months past, and the silver bath, if not put on one side altogether, has not been called into requisition. But in the studio there is a dark room always at hand, a haven of safety and refuge to the photographer, which the traveller, unfortunately, lacks. If things do not go quite as they should do, the stay-at-home photographer has always his dark room to go into, wherein to investigate the circumstances of his failure. He can always see how far he has succeeded or failed on the instant, and may at once investigate the cause of failure. His siter is still in the next room, and another plate can be taken without loss of time. The traveller, unfortunately, is in a far worse position. If he does not burden himself with a dark tent, then he must run the risk of failure with his dry plates; if he carries a dark tent with him, the advantages of dry plate work cease to have their full importance with him. There is no doubt, too, that a photographer who is not well versed in dry plate development gets nervous over the manipulations when he knows that the object he has photographed is, perhaps, left far behind in his journey, and there are no means of retaking it should his plate turn out a failure. He is not working under favourable circumstances, and he gets more failures than would otherwise be the case. Under the circumstances a traveller never seems to feel confidence unless he carries materials for the wet process, and, when he has these with him, he naturally employs them. The experiences recently detailed by Dr. Stolze before the Berlin Photographic Society are not likely to give travellers any further confidence in dry plate work. Dr. Stolze has made a journey through Persia, and his results, obtained not with a few, but a large series of dry plates, must have been very discouraging. He tried during his wanderings, he tells us, no less than three hundred emulsion plates, with which he obtained very poor results, owing, he explains, to the yellow glass of his transfer box not being proof against a Persian sun. If the emulsion plates had been prepared with gelatine, we can well believe the traveller's explanation, and it certainly behoves travellers to bear in mind that protection which may be sufficient in a European climate, fails to preserve plates from immunity in the East; but Dr. Stolze's other dry plates were not more satisfactory. Films, whether prepared with coffee, tea, or beer, were not to be relied upon, and, in the end, Dr. Stolze had to do what many before him have done, namely, get along as well as he could with the wet process. This resolution did not at once remove all thorns from his path. The want of water and a dark tent, together with the insupportable heat, compelled him in the end to cut short his photographic tour in Persian territory. He did not wash and fix his plates, but contented himself with developing them and coating them with a solution of sugar. Dr. Stolze's woes as a travelling photographer appeared to be never-ending. He had believed so sincerely in his dry plates that he had come almost unprepared to work by the wet method. He complains that at Bombay no collodion of any worth was to be obtained, and he hints that dealers appear to be in the habit of sending out such photographic material to India as they cannot get rid of elsewhere. Either it was impossible to procure, since the bottles arrived always nine-tenths empty. We suspect the circumstance goes a

good way to explain the dearth and inferiority of other articles—such as collodion, alcohol, &c. Ninety degrees in the shade must play a good deal of havoc with photographic chemicals, although we have many correspondents in India who have never complained against difficulties from this source. Dr. Stolze would have us believe that at last he was so reduced in the matter of supplies that only lunar caustic and raw collodion remained to him, with which he prepared some emulsion that secured very good views of the ruins of Persepolis. No doubt climatic influence must work an impression upon dry films, and an emulsion or coffee plate prepared in England or Germany no doubt would hardly give such successful results after the vicissitudes of travel in an Eastern country; at the same time, we remember, Captain Abney had little difficulty at Thebes with films prepared in England prior to his departure. The plates in the latter case, it is true, were prepared by himself, and, as Captain Abney is *facile princeps* in all that pertains to dry work, no doubt the films were handled with unusual skill; but still there is the fact that they were not found wanting. Captain Waterhouse, the Assistant Surveyor-General at Calcutta, has also worked repeatedly with dry plates, and has secured eminently satisfactory results. In the case of both these officers, of course, they are well acquainted with the Tropics, and it would be well if they could be prevailed upon to place on record their experiences on the preparation of dry plates to be employed in hot climates.

The Directory of the Photographic Society of Vienna.—The Photographic Society of Vienna is in the van in many respects. They have for years past issued a series of medals for progress and improvements in various branches of the art, and they organize lectures from time to time for the good of members and their friends. Under the Society's auspices, the President, Dr. Hornig, has regularly issued, of late years, an annual or note-book, for the use of members and photographers generally, which contains a mass of useful information. There are the names of all photographic societies in the world, together with their chief officers. All the known photographic journals published in Europe, India, and America, are given, with their place of publication; a list of photographic requisites which are poisonous, and what the antidotes are for such poisons, together with a mass of other useful information. Now the Vienna Society has published the first part of a General Directory. So far it is only complete as far as the letter M, and it is to contain the names of all the photographers in the world arranged under towns, and the towns in alphabetical order. The Society depends upon home and foreign photographers to point out errors, if they exist, and these will be corrected in a second edition of the work.

Journals Illustrated by Photography.—Photography is being utilized again in the illustrated papers for depicting war sketches. One of the finest plates in the *Illustrated London News* of last week is from a photograph by a Durban artist. It shows the crossing of Col. Pearson's column, a flat-bottomed barge filled with Linesmen going on duty across the river, while in contrast with the neat, soldierly uniforms are shown two or three Kaffirs in war paint and feathers. The scene is a most realistic one, and has all the life and reality which attach to a camera picture. We cannot see why a journal containing nothing but photographs should not be issued illustrated (say) both by the Woodburytype and the Collotype process. There should be hardly less delay, upon receipt of negatives, than is required to transfer a sketch on wood, cut the blocks, and have them prepared for printing. By having half-a-dozen photo-mechanical printing surfaces prepared, the delay that might occur from pulling off slowly would be at once neutralised. The sale of such a journal giving (say once a week) four or six prints of interest would command a ready sale, and as people now pay sixpence apiece for a great many of the London journals, double

that sum at least would soon be forthcoming from real photographs depicting scenes in Zulu-land, Afghanistan, or any other place to which popular interest attaches.

ARTIFICIAL LIGHTING.

BY R. P. HARMAN.*

IN introducing the subject of artificial lighting (and this paper in itself is but an introduction), I feel that some apology is due from me to the members of the Society; for during the past few weeks it has apparently become such an all-absorbing topic, and the newspapers, as well as our own orthodox photographic journals, have so taken up the matter, and related all the hitherto known or published facts and fallacies concerning it, that it needs a far more powerful exponent than myself to do it justice. I will, therefore, not waste your time by making this paper a resumé of what must be already known to most of my hearers, but will briefly give you my own experience, trusting in a subsequent discussion to elucidate some new facts, and make the subject an interesting one.

A question arises at the outset, Is it advisable to investigate and persevere in the application of artificial light for photographic purposes? A professional photographer so strongly condemns it in a letter to the PHOTOGRAPHIC NEWS of the 21st ult., calling it a "night business" and an "ignis fatuus," with many other unwholesome remarks, that I confess I have been somewhat anxious lest my paper should meet with an unfavourable reception. This gentleman says: "Photographers have enough to do," &c., &c. But I believe there are many photographers who have not had quite enough to do during the last four months, and who would gladly have made a little profitable overtime. I shall therefore address my remarks to "whomsoever it may concern," believing that it concerns not only photographers, but hundreds of thousands of would-be patrons in all classes of society, who are not at liberty until the day's work or the day's duties are over.

What is more common than for a city gentleman to rush into your studio about nine a.m., with watch in hand, and just ten minutes to catch the train, his face flushed with heat and anxiety lest the said train should go without him, and he wishes to be photographed? His wife has been worrying him for years for his portrait, and now he remembers that to-morrow is her birthday, and thinks he will order a portrait of himself on his way to town, and call for it in the evening, just by way of a surprise for her. Your feelings prompt you to let him catch his train comfortably—in fact, to decline the little job, or, at any rate, to request that he will defer it until he has a more leisureable opportunity; but you cannot afford to lose customers, and the chances are that he will be taken in some London skylight during his quarter of an hour's luncheon, and you lose him altogether. You therefore prepare a plate as quickly as possible (unless you are so fortunate as to have a dry plate quite handy), your visitor in the meanwhile pacing the studio impatiently, and calling out for you to be quick, or he must go. You may easily imagine the kind of expression and the kind of negative you are likely to obtain under these circumstances. Your sitter hurries away, and cannot stop to pay, even for the proof; the proof is not quite to his liking when he calls; and his promise of a re-sitting is never fulfilled.

This is one class of people, and their number is legion, who live in the suburbs of London, and who never can spare an hour to be photographed, and to this want of opportunity I attribute the large number of lady-sitters compared with gentlemen who visit photographic studios generally. There are, of course, exceptions to this rule, and it may not apply to London; but the experience of many photographic friends, as well as my own, gives the same teaching. Now, if the City gentleman that I have alluded to would wait until after business hours, and after

his evening meal, he would come in a far happier and more tranquil state of mind, in good humour, and just fit to be photographed. Instead of a trial, it would be a treat, like going to the theatre (especially when he saw the blue fire) or like taking a stroll by moonlight. The same argument applies to artisans and the working classes generally, who can only find time to dress respectably after working hours. To these I am sure it would be a "real convenience," and I think the few specimens I have brought with me this evening will prove that the subject is worth studying, that it is not quite an *ignis fatuus*, and that is also within the means of the humblest photographer.

The apparatus that I use is simple in the extreme, and as I have not tried either the electric light, the photogen, or the luxograph, I will leave it to those who have done so to speak of their merits. I have no doubt they are all good, perhaps far superior to my own—they ought to be; but then they are not within the reach of all. The electric light, for instance, was quite beyond my purse; with regard to the other two methods I have mentioned, I have only seen one demonstrated, and that did not impress me favourably. I am accustomed to quick exposures, and when I saw a gentleman exposed to a blinding light for exactly thirty-five seconds, with the burning material hissing and crackling all the time, I tried to calculate what chance I should have with nervous sitters, and how many I should pass in an evening's work.

On account of the objectionable noise and smoke attending the combustion of pyrotechnic compounds, I resolved to try what could be done with magnesium ribbon. I took an old umbrella, and divesting it of its stick, I converted it into a reflector by lining it with white paper. I then procured a child's wooden hoop, which I covered with white tissue, and this I hung loosely over the open part of the umbrella. The latter was fixed edgewise upon a head-rest, and in this I burnt the magnesium ribbon. I found that four inches of wire gave me about ten seconds' exposure, which proved quite sufficient for one of Wratten's gelatine plates.

My first attempts with magnesium were so satisfactory that I believe, with perseverance, I should have produced some excellent portraiture; but a friend having given me a formula for a very cheap pyrotechnic compound, I was induced to give it a trial, and I have now finally adopted it. My mode of using it is as follows:—An empty box without a lid (of any dimension, but the larger the better) is stood upon end and raised about three feet from the floor; the open part, facing the sitter, is covered with white tissue except about six inches from the bottom, to allow for draught and to put in the fire powder; the inside is lined with white paper; a hole is cut in the top not less than six inches in diameter, and over this I invert a flower pot with the bottom knocked out; and a cardboard chimney taken through a window effectually carries off the fumes.

A more concise and possibly more lucid description of a similar construction is given by the Rev. H. J. Palmer in the PHOTOGRAPHIC NEWS of February 14th; it resembles my own with a few exceptions, one being the novel smoke-holder, or chimney, for drawing-room purposes. This I gave a fair trial, but found it impracticable, for unless it is made of an enormous size it will not hold the volume of smoke for ten seconds' combustion, and it is, of course, necessary to wait until "the last faint spark expires," before you can remove it. One ounce of the compound will burn for ten seconds, and as this is about the usual exposure (although good negatives can be taken with less), the cost of production will be one half-penny for the light. I use it in the following manner:—A saucepan lid is filled with dry sand, and laid on a trivet about six inches high in the centre of the box; the powder is then poured on the top of the sand in the shape of a pyramid, a hole is made in the side of the box about one inch in diameter, through which I can watch the fire and insert a wax taper to light it.

* Read before the South London Photographic Society.

I have here given the most economical way of working the process, although I am not insensible to the advantage that would be derived from having suitable reflectors (mine are all paper ones). The fire-box may be lined with tin to produce a more powerful light, and if made on purpose, the box would be better in the shape of an old-fashioned corner cupboard.

While on the subject of apparatus, it may not, perhaps, be altogether irrelevant to describe the lantern with which I develop dry plates. It is a box of precisely similar construction to the fire-box already described, with a cover to hang over the front, made of cardboard and deep orange coloured paper. In the box I place a good paraffin lamp, and I find it quite effectual, as I have held dry plates in front of it for two minutes without fogging. There is another hint which may be useful to those who use gelatine plates for the first time. It is very convenient to take a print from the negative before varnishing, so as to re-intensify if not sufficiently done; but unless great care is taken to have both the negative and paper thoroughly dry, the gelatine film will become impregnated with the silver from the paper, and will soon blacken in the daylight, becoming worse and worse with every print, until the negative becomes useless, unless the varnish (if it has been varnished) is removed, and it is again placed in the hypo bath. The negatives that I have brought with me this evening were all taken with dry plates with exposures varying from six to ten seconds. With regard to those negatives, and also the prints from them, I wish it to be understood that I have brought them only to show the effect of lighting and exposure; in other respects they are extremely bad, and must not be taken as a specimen of work. I shall, therefore, feel obliged if you will kindly return them to me after inspection. With one exception they are entirely untouched. I have purposely left them so, as we all know what can be done by elaborate retouching, and it is impossible to judge of the merits of a negative when it is piled up with so many permanent pigments of plumbago.

A NEW TONING PROCESS FOR LANTERN SLIDES AND TRANSPARENCIES.

BY WILLIAM BAOOKS.*

As regards the exposure. When the system of contact is used, expose from about one second to five or six, according to the intensity of the negative, in the front of an ordinary window (without opening it). In the camera the exposure is longer. With a good light, when using whole-plate negatives, from about twenty seconds and upwards; with a very intense negative, sometimes two, or even three, minutes will not be found too long; but, as a rule, give plenty of exposure, as an under-exposed plate is useless.

The year before last I read a paper before the South London Photographic Society, respecting the colour of the developed image, so as to obtain rich warm tones by using in conjunction with the alkaline pyro developer certain salts. I obtained the best results with acetate of soda, and also phosphate of soda. Very charming results were obtained by this means, but the system was only available when the warm tints were required; it was useless for black tones. Since I published the results of those experiments, I have investigated the matter still further. I find that different samples of pyrogalllic acid will give different tones. I have now in my possession three different samples: one will develop the image of a warm red tone; another gives an image of a greenish tint with good intensity; and the third sample gives a very thin, slate-coloured, miserable looking thing, and no amount of alkali will alter their character. Then, again, I find also different results obtained by using different samples of carbonate of ammonia. I believe there are two sorts in the market—the ordinary commercial, and the re-sublimed. The former sample has the tendency to give a greenish tint to the image; and the latter generally gives a

rich vigorous tone, with a reddish cast. I always find it best, when purchasing, to get this article from some large wholesale house. Several times, when I have run short, I have obtained some from the nearest chemist and druggist—and to my sorrow. I find the best way of keeping carbonate of ammonia is to keep it in a jar or wide-mouth bottle, with a well-fitting cork, and keep the bottle or jar, *mouth downwards*, in the coolest place in the house. Liquor ammonia gives, generally, a bluish kind of image, and I very seldom use this at all.

After the plate has been exposed either by contact or in the camera, it is flooded with three parts of methylated spirit and one part water, allowed to soak well into the film for about one minute; the plate is then well washed (or, what is preferable, soaked) in a dish of clean water for two or three minutes, and then well washed under the tap, and a developer poured over, made from the following solutions:—

A.—Saturated solution of carb. ammonia	4 ounces
Bromide of potassium	... 2 drams
Water	... 8 ounces
P.—Pyrogalllic acid (best)	... 96 grains
Absolute alcohol (805°)	... 1 ounce

For a quarter-plate put about two drops of solution P into a clean measure, and about two drachms of solution A, and pour over the plate at once. I prefer to develop the small plates in a little cemented glass dish, as described by me some years ago in one of the *YEAR-BOOKS*, as I can easily see through it and watch how the intensity is going on. I find, as a rule, almost every sample of emulsion will stand the developer compounded as above. Should the subject be one of violent contrasts, one drop of pyro will be found sufficient, and with a weak and flat negative five or six drops will not be found too much. The image must be developed to its full intensity—if anything, a little above—as the fixing agent used is more powerful. After the plate has been well washed, it is fixed in a solution of cyanide of potassium. Hyposulphite of soda is useless in this instance. I use it about the following strength:—

Cyanide of potassium	... 20 grains
Water	... 1 ounce

It will be found best to use this in a dish, and immerse the plate in it, moving the dish about. It will fix in about two or three minutes. By using cyanide instead of hypo, we obtain one of the most wretched colours imaginable—of a nasty yellowish buff, and it is by obtaining this colour we are able to tone to any tint we please. Care must be taken not to allow the cyanide to act after the film is well cleared, especially if the image is thin; but, at the same time, all traces of the unaltered bromide of silver must be dissolved. The plate is now washed under the tap for about a minute, and then allowed to soak for about a quarter of an hour in a dish (the larger the better) of clean water. This washing must not be skirped, or the toning will be uneven. When removed from the dish of water, it is again well washed under the tap, and is then ready for toning.

The best toning agent I find for the purpose is bichloride of platinum. I have tried chloride of iridium, and though I have not yet succeeded to my satisfaction, have not given it up.

Toning Solution.

Bichloride of platinum	... 2 to 4 grains
Water	... 20 ounces

The toning is best accomplished in a white dish. After the plate has been well washed, it is placed in the toning bath, and the dish must be well rocked about to insure even action. It will at once change from the miserable yellow colour before described, first to an orange tint, and then to pale claret, to deep claret, to purple claret, pure photo-tone, warm black, deep black, engraving black, and finally to a slaty black, something like platinum gives with an ordinary bath plate. Now the toning can be stopped at any stage, according to taste and subject. It almost may be termed a magic system of toning. If the plate has not been washed sufficiently, it will tone in streaks and patches, which can never be over come unless the toning is carried on to the slaty

* Continued from p. 116.

tints. After the image has been toned sufficiently, it may, perhaps, be found a little too intense to give the best result in the screen; if so, it can be passed through the cyanide again. In so doing, if only the red warm tone has been obtained, the tone instantly is destroyed on immersion in the cyanide solution, which also at the same time reduces the image to the required depth; but if the black tones have been obtained in the first instance, it has but little effect upon the colour; the only effect the cyanide solution has, is to reduce the intensity or clear away fog. The warm tones are composed of silver and platinum, and the black tones of platinum only.

Now if we compare a slide that has been toned with one that has not been toned, it will be readily seen that the toned one is far superior as regards texture and clearness. The untoned slide looks almost perfect when seen alone, but together the detail has the appearance of being clogged up. The black cold tones are very suitable for making enlarged negatives.

I must not omit to state that it is impossible to get good tones on very weak images. Better tones are obtained in transparencies that are suitable for decorative purposes, but lantern slides can be made sufficiently intense to bear any tone required. I am in hopes, in a few years, to see a greater interest evinced in this beautiful branch of our art-science than it has hitherto received.

One drawback with the system that I originated with the use of acetate of soda, &c., with the alkaline pyro, was, that it was at times difficult to get a series of transparencies of the same tone; but with this method the toning can be stopped just at the moment the desired tone is obtained, exactly the same as a silver print.

Before I close, I must also call attention to the bichloride of platinum. Samples at times will vary, and I hope I shall not transgress the limits allowed to contributors in these pages in stating—mostly for the benefit of photographers residing at a distance from large towns or cities—that bichloride of platinum can be obtained at Messrs. Hopkins and Williams, Cross Street, Hatton Garden, as I am well aware that it is not kept in stock by the ordinary photographic dealers. I am also busily engaged in working out several other branches of photography where platinum toning plays an important part, and also hope to have the pleasure of making them public.

I must not omit to mention that the toning need not be done in the dark-room: it can be done in full daylight, as it has been fixed, by toning in a white porcelain dish; lifting the plate up at about the angle of 45°, the tone is readily seen. Should the solution tone too rapidly, it can be diluted with water. Use ordinary tap water. After washing and drying, it can be varnished in the ordinary way. The best varnish that I find for the purpose is made as follows:—

White hard spirit varnish ... 1 part

Methylated spirit ... 3 to 6 parts

according to the thickness of the white hard varnish. Some samples will bear more spirit for diluting than others. For lantern slides it is best to use the varnish as thin as possible; if used too thick, after a time it will crack, from the heat of the lantern. The best guide is to thin it down so that only a slight gloss is seen on the varnished film; if it is too thin, it dries dull and dead. I have seen many slides ruined by using the varnish too thick.

In conclusion, I will give a hint or two about mounting. I generally use masks black on both sides, and on one side I write the name of the subject in white. For this purpose I use moist tube water colour, and thin down to the consistency of cream, using an ordinary steel pen kept for the purpose, keeping the bottle containing it well corked when out of use. By adopting this system the white letters can readily be seen in a dull light, and the side that the inscription is written on goes next to the light, unless the pictures are being shown through the screen, when it is reversed. Mr. G. W. Wilson adopts this method, and I think it is one of the best.

In regard to the binding of the slides, strips of gummed paper can be bought for the purpose. I generally find them much too thick for the purpose; and gum is the very worst thing that can be used, for as soon as it is dry it tumbles off. The thing that I have found to answer the purpose is common paste, and better still if the paste is made the way I described in the 1879 YEAR-BOOK. The paper I find most suitable is black tissue paper. After the slide is mounted and cleaned, I take some thin shellac varnish, and varnish the paper binding all over; it is then almost indestructible for ordinary wear. It is a little more trouble, but it will be found well worth the little extra time that it takes.

THE APPLICATION OF ARTIFICIAL LIGHT TO PHOTOGRAPHY.

BY DR. DRINKWATER, F.C.S., ETC.*

THE events of the past month have rendered necessary an apology on my part in introducing the subject of the use of artificial light in photography to your notice. I was asked to read a paper before the Society, and as I had devoted considerable time, especially of late, to the study of the various methods of artificial light, I chose this as a subject on which to say a few words to you this evening. Since so doing, I find I have been forestalled in more than one instance, as kindred societies have had similar papers read at their meetings, and, as far as I can judge from the reports of these meetings, the papers have been compiled by far abler hands than mine. I am afraid, therefore, gentlemen, I have not much in the way of novelty to offer you, but I may, perhaps, be able to give rise to a discussion from which we all shall benefit myself more than any of you.

Before proceeding to describe any of the methods that have been used for the application of artificial light to photography, let us enquire as to whether there is any need for its use, or if the need be so urgent as to cause the apparatus to be among the necessary impedimenta of the studio. Novelty is an aid to success in any calling, and no doubt the photographer who advertised photography by the electric light, and at all hours of the night, would do a roaring trade for a season; but when once the novelty had worn away the public would fail to see the advantage of having their likenesses taken at night, when the daylight would suit as well, and not cost so much, which is a matter of primary importance now-a-days. If there is no urgent necessity for carrying on portraiture by night—and I firmly believe such to be the case, except in rare instances—why need the subject attract our attention and take up our time? Artificial light in photography should not be used as a substitute for sunlight unless in the exceptional cases already alluded to, but as an aid to our work on dull and foggy days. Viewed in this manner the application of artificial light to photography has far more interest to the genuine artist than if merely looked upon as trade trick or advertising media by which one photographer can outdo his brethren.

In producing artificial light we have to follow certain natural laws, and no matter what method we pursue to obtain our end, these laws cannot be infringed. In the general usage of artificial illumination we have a large number of substances which are available for the purpose, all being easily governed by the laws I have alluded to; but in its application to photographic purposes our circle is limited, as the conditions to be fulfilled are more stringent, and two essentials are at least necessary for success, viz., *power* and *activity*.

For an illuminant to have power we require flame and luminosity, and before we can proceed to devise a method of illumination we must know something of the substance we are dealing with. Any solid or liquid substance which becomes liquefied or decomposed into gas at a temperature below that required for its combustion burns only in the shape of gas, and the light so produced we designate as flame. The three cones of this flame I need

* Read before the Edinburgh Photographic Society.

scarcely allude to, as they are well known to all of you. The two outer cones are of the most importance to us as photographers, they alone giving us luminosity. The old notion concerning the luminosity of the flame was that the high temperature along with the atmospheric oxygen decomposed the hydrocarbon, setting the carbon free in the solid state, and this being heated to incandescence emitted light. Many researches have been made, but though they have all tended to refute the above theory, they have not succeeded in explaining many of the phenomena connected with artificial light. As an example of this we cannot tell from an analysis of a gas what its candle power may be. It is now very generally admitted that the luminosity is due to the combustion of hydrocarbons, and that the degree of luminosity is infinitely connected with the density of the vapours contained within the envelopes.

Following out this theory, various methods have lately been proposed by which to increase the luminosity of ordinary gas by introducing the vapour of the higher hydrocarbons into the flame, but I will speak of these more fully presently. As regards activity little need be said, as very few, if any, artificial flames *per se* possess activity. They are all more or less yellow; but this difficulty can be easily overcome by passing the rays through coloured media, provided the luminosity is strong enough. A third requirement is also necessary for photographic illumination, viz., *diffusiveness*, for without this, luminosity and activity are comparatively useless. And this is where I am afraid the electric light fails; it is not diffusive, and in consequence we have very strong shadows.

Having thus glanced at the requirements in a method of artificial illumination necessary for photography, I will now refer to the various plans that have been tried, with more or less success, tracing the history, as well as I can, from the first experiment recorded in this direction up to the present time, when success has crowned the efforts of a few undaunted workers. As far back as 1852 we have records of attempts at photography by night, and several patents were taken out for divers methods, but they resembled one another very closely, being all devised on one common type. Some ordinary pyrotechnic composition was burned in a glass lantern, and the rays, having been rendered more actinic by passing through blue media, were diffused throughout the operating room by means of suitable reflectors. As you can easily understand, the disadvantages of such crude systems are many. The generality of the compositions used to burn in the lantern contain sulphur and oftentimes antimony, the fumes resulting from the decomposition of the burning mass being not only unpleasant, but dangerous to both operator and sitter. Inventors and improvers stepped into the field, but their efforts resulted in more or less failure, until M. Lombardi, of London, perfected an apparatus that is now seeking favour from the members of the profession under the name of the Luxograph. Through the kindness of Mr. Asher, the first photographer in Edinburgh who has had the enterprise to erect the apparatus in his studio, I was on Friday evening last permitted to see the instrument in action, and had the pleasure of being photographed by its aid. Two negatives were taken both of Mr. Dobbie and myself, and as negatives they were all that could be desired. I will pass round the prints for your inspection directly, along with some taken with a similar instrument by Mr. Turnbull, of Glasgow. Before doing so, however, let me describe the instrument. It consists, outwardly, of a large metal cylinder, slightly conical, and closed at the narrow end, or back, and nearly six feet in diameter at the other, the wide end, or mouth, the latter being closed by a screen stretched tightly over it, composed of what seems to be ordinary thin tracing paper, but is in reality a material called *papier minérale*, manufactured in Paris, and owing its peculiar semi-transparency to a certain mineral preparation, as its name implies. This screen is called the "dispersing screen,"

its use being to disperse the rays of light which pass through it, as we shall see presently, and which, without such arrangement, would, as in the case of the electric light, throw shadows of preternatural intensity on the picture they produced. If you can imagine a huge kettle-drum tilted up on its side, and fixed in such position with the head facing the seat whereon the sitter for his or her portrait is placed, you will have a notion about as nearly accurate as mere words can convey of the exterior appearance of the apparatus. The interior of the cone is lined throughout with some hundreds of small mirrors, slips of silverised plate-glass, thus constituting it an immensely powerful reflector. At the back of it, and in the centre, is a square lantern of blue glass of three different tints, open at the top, inside of which is placed an iron saucer or deflagrating dish, and access to which is had by a little furnace door at the back of the cone. The posing of the sitter, the "focussing," and general arrangement of the camera, having been made by ordinary gaslight, the *modus operandi* of the Luxograph is the simplest thing possible. An assistant takes out the deflagrating dish, puts therein from four to six ounces of a yellowish-looking pyrotechnic powder, and then returns it to its place within the lantern. All being ready, the powder is ignited. The ignited powder at once begins to burn with increasing intensity; and when the combustion has reached its acme, the face and figure of the sitter is flooded, and the room filled, with a beautiful soft violet light of a most diffusive and actinic character. From what I saw of the instrument I can certainly speak strongly in its favour, although I believe it can yet be improved both in its reflective powers, in the nature of its pyrotechnic composition, and in its management; but a little experience in its use will soon do all this, and an intelligent operator will have suggestions occur to him during his work which will ultimately render it a valuable aid to his art, especially in this uncertain climate. I cannot view the cartes which I have with the eye of a professed photographer, nor am I able, I fear, to judge of their artistic qualities fairly, but as far as I am able, I consider them perfect; and there is, I think, no sign which would enable anyone, however skilful, to pick them out from others taken on a clear summer day.

(To be continued.)

CLEAN PLATES.

BY F. A. BRIDGE.

I HAVE noticed on several occasions lately, in "Answers to Correspondents," you say "the marks you allude to are caused by dirty plates;" and only a few weeks back I noticed an advertisement offering, for a consideration, to supply an efficient method of cleaning plates.

Now, I have adopted the following plan for about seven years, and never spoil a picture through the plate being dirty, although some of my small plates (used for negatives for enlargements) have been used over and over again.

Fill a copper about two-thirds with water, and when it boils, put in a couple of packets of Manby's Cleansing Crystal; stir well, and while the water is still boiling, drop in your dirty plates *face downwards*. When the water has cooled sufficiently, take out your plates, and in nine cases out of ten the films will be left behind in the water. Rinse the plates well in clean cold water, and, while still wet, rub them over with Solomon's Diamond Polish (or tripoli and water with a little methylated spirit). I allow this to dry on, and when I require them for use merely rub it off (don't forget the edges) with one leather, and then give a final polish with another; but they may, of course, be clean and polished at once if preferred.

I may, perhaps, mention that I never use a substratum for dry plates, but I invariably edge my plates—large and small—with india-rubber in benzole, and I am never troubled with either dirty plates or split films.

I believe I originally got the idea of using Manby's Cleansing Crystal from the YEAR-BOOK or NEWS; but it is so long ago I am not sure about it.

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EMULSION PLATES IN THE STUDIO.

THE imminence of the revolution in photography begins to be generally recognized, and we receive many communications on the subject, of curiously varying character. Many photographers hail, with pleasure, the prospect as a welcome change, whilst others, who, having mastered the wet collodion process, and fancying they saw in it "finality," were disposed to exclaim, "Rest, and be thankful," seem disposed to resent the coming change, and charge us with being a prophet of evil. Happily for themselves, however, the majority of our correspondents accept, with thankfulness, the idea of increased facilities for good and artistic work, at the risk of a little additional temporary trouble, and earnestly ask for aid in adapting themselves to new circumstances.

There is one class of correspondents for whom, we must confess, we feel considerable sympathy, although at times it is impossible to avoid a little amusement at their complaint. One gentleman writes: "I entered into photography as a profession twenty years ago, having been previously a miniature painter. I served no apprenticeship to photography, it is true; but I paid a handsome premium for instruction, and I purchased, at a good price, the studio, plant, and stock which an enterprising travelling photographer had twelve months previously established in our little town. My occupation as a portraitist was gone, and I was glad to spend the remnants of my little patrimony in thus averting ruin. For a time I did pretty well, by taking a superior class of glass positives, which, by my skill as a painter, I was able to finish pleasingly. Then came a "revolution" in the rage for *cartes-de-visite*; and I, who had never really mastered the negative process, was compelled to learn a new method, or rather, several, for besides learning how to take negatives, I had to learn to print. For many years I was full of troubles, and had just begun to feel tolerably master of my work, when another revolution was threatened. Carbon was to be king, and silver printing to perish. This was a serious trial, for my experience of the instability of silver prints made me feel it imperative upon a conscientious man to use a permanent process when one was available. I will not tell you of the heart-breaks and trials which experimenting with carbon brought me; suffice it to say, that eventually I conquered, and have been now for some time doing almost all my work in carbon. I am thankful that I adopted it, as it incidentally led me into doing, almost exclusively, a better class of work, at more remunerative prices: more pleasant and more profitable. But now, when the elasticity of youth is past, I am again disturbed with the cry of "revolution"! And, unless I am willing to be surpassed in the race, I must learn a new process, and learn to use new tools. Can you advise me: is it necessary? Can I safely go on adhering

to a process I know, walking in the old paths; or shall I try the new process, and if I fail, must I accept my fate, and, with as much dignity and patience as may be, betake myself to the calm retreat of the Parish Work-house?" As we have said, we cannot but feel some sympathy with our correspondent and such as he, although many will laugh. Within limits it is a picture, of course, of life in many trades and professions. The tide of progress and improvement inevitably sweeps away many victims in its progress. The hand-loom weaver was ruined by the introduction of power looms; the proprietors in the old coaching system were ruined by railways, and so with a hundred of other examples. Wise men accept the change and endeavour to adapt it to their purposes. Photography, as one of the youngest, but most rapidly progressive of arts, has inevitably seen many of those revolutions. A very serious one occurred a quarter of a century ago, when the *Daguerreotype* process was superseded by the introduction of collodion. We knew some who were so disgusted by the complete change in operations which was involved in the change, that they rather abandoned the profession than adopt the new methods. The majority, of course, devoted themselves with assiduity to mastering the wet process, and succeeded. And it is worthy of remark that, as a rule, those who had been most distinguished amongst *Daguerreotypists*, for the high-class excellence of their work in silver plates, soon attained to the same eminence in the production of negatives and prints by the new methods of working. This was also the case with carbon. Some of the best silver printers became the best carbon workers. The same promises to be due of the revolution now in progress. Some of the ablest workers by the wet process are already producing the finest possible negatives on rapid dry plates.

Many of our correspondents ask for advice as to whether we recommend them to produce their own plates, or to purchase them ready prepared. If the latter, whose plates we recommend; if the former, they ask for concise and definite instructions, as they are confused in the mass of information we have published. We fear that we cannot respond quite satisfactorily to all these questions. We may, without hesitation, recommend all about to try the new method to commence by purchasing plates ready prepared, and so reducing their risks of failure. We cannot recommend any special plate. There are three or four kinds of rapid gelatine plates now in commerce, and we have heard good reports and seen good results of all. In another column we print some valuable hints and advice from a very successful worker—Mr. Ferranti—who points out that as plates and developers can be purchased ready prepared, all that is left to the sagacity of the experimentalist is to follow carefully the instructions given. This advice is of the most vital importance. It should be the most simple and easy to follow. But, oddly enough, it does not seem to be so. We are continually receiving letters asking if they may modify the formula; what would be the effect of doing something or using something entirely different to that stated in the instructions. If the aim were experimental investigation, trial of such variations might be legitimate enough; but where the aim is practical success, nothing can be more unwise. As regards recommending some special process, or re-stating a special formula, we are equally unable to meet the wishes of some correspondents. In our last volume alone the fullest information is given, commencing on the second page, where concise, clear, and detailed instructions are given, and, at intervals of a few pages, continuously throughout the volume. Towards the close of the volume Mr. Bennett, who has been singularly successful in gaining extreme rapidity, gives his process in detail. We would advise the intending worker to read the various articles, then take one clearly stated process, and steadily work at it until success is attained; but to adhere throughout to instructions.

An important point to remember at all times is, that a new process involves new conditions, and that old experience, or experience with other processes, is often really misleading. We commend to beginners the article by Mr. Ferranti, and others he has been good enough to promise to follow. As the question of priority has been in discussion, we may mention that Mr. Ferranti commenced the use of dry plates in the studio upwards of nine months ago, and the examples with which he has favoured us are in all respects similar to prints from the finest wet plate negatives. Of the facility possible to be attained by skilful application for a few months, we may mention that in one day, a few days ago, Mr. Ferranti developed twenty-six negatives, all of which had been taken in from three to five seconds with a Dallmeyer 38 lens, not one of them a photographic failure. A manifestly important point is mentioned by Mr. Cobb, who has sent us some very admirable examples. He points out the danger of misappreciating the quality of the negative, as the appearance of a good gelatine negative does not resemble a good wet collodion negative. In the latter, visual opacity in the dense portions is a guide to printing opacity, whilst a gelatine negative may appear thin, but yet possess great printing intensity.

This is, however, but one amongst the variation of circumstances to be met. The photographer must be prepared for new conditions altogether; but he may rest assured that the results will well repay for the trifling additional study and care the acquisition of a new process may involve.

FRENCH CORRESPONDENCE.

THE MONITEUR UNIVERSEL AND THE PROCESS OF PHOTOCHROMIE.—THE PHOTOGRAPHIC SOCIETY OF FRANCE.—THE SOCIÉTÉ FRANÇAISE DES ARCHIVES.

M. Vidal's Process of Photochromie in the Moniteur Universel.—Every day we who live in Paris are learning to appreciate more and more the services that photography in its different applications can render to the scientific and intellectual world. Among these applications are especially to be noted those to printing in fatty inks, the establishments for producing which are constantly multiplying and continually introducing improvements. In the first rank of these establishments the *Moniteur Universel* occupies a prominent place, for the managing directors of this journal have laid themselves out for working on their own account all the more important processes that have recently been introduced to public notice. By seizing and realizing the truth that the common processes of printing do not stand alone in their power to disseminate artistic ideas and productions, its managers have succeeded in making this establishment the principal centre for the publication of all the more important periodicals and illustrated literature. Many special branches have, from time to time, grouped themselves round the main stem of the institution, as, of old, huts and cottages were built in the neighbourhood of chapels, until they grew to be villages, and ended by becoming towns. Every kind of process for printing with fatty inks has one after another been introduced into and tried in the workshops of the *Moniteur Universel*, and, among such processes, none is more celebrated than the photochromie of M. Leon Vidal. This invention not only facilitates the reproduction of the numerous works of art contained in the public museums of Paris and France generally, but it also affords the means for bringing out magnificent illustrated publications with explanatory text to which the most eminent men in their own special lines have become contributors. In this way have been issued *Le Tresor Artistique de France*, and *L'Histoire Generale de la Tapisserie*, works that are real trophies of archæologic art. To make an undertaking of this kind successful, it requires to be under thoroughly sound and strong management; but though that of the *Moniteur Universel* complied with this condition, it seems that the

process of M. Vidal, admirable though it may be in its results, is more costly to work than was at first supposed. On this account, the requisite number of proofs for the illustration of the literary works undertaken by the directors of the *Publications Periodiques* could not always be furnished; besides which, the photochromic process has other faults which were only realised when it was worked on a large scale. Difficulties and differences have thus arisen between the inventor of the process and those who hoped to work it at a profit, and, in consequence, M. Vidal has separated himself from the staff of the *Moniteur Universel*. As far as he himself is personally concerned, this rupture is of no importance, for M. Vidal, a man full of resources, has already made arrangements for joining, as manager of their photographic reproductions, the house of Lemercier and Co., well known for the large part they have taken in the modern progress of the typographic art. But the question will naturally arise, whether the publications illustrated by means of photo-chromie will not suffer, as though the directors of the *Publications Periodiques* are endowed with sufficient energy and courage to enable them to endure any number of reverses, there are many interested in their valuable and artistic enterprises who are not without feeling uneasiness. There is no doubt that those works that they have undertaken they will carry out to the end; but will they be able to continue their illustrations by means of the photo-chromic process? As a general rule, nothing is more advisable than to quit the dangerous slope caused by an expense that is out of proportion to the profit; but the last numbers of a book that is published by subscription must be at least on an equal scale of beauty and finish with those of the first; unless, indeed, by the introduction of some more complete process, they can be made superior, for it is then only that those whose interests ought to be protected have no ground for complaint. For these reasons it is now contemplated to introduce, for the purpose of carrying on the works of the *Moniteur Universel*, the process of M. Germeuil-Bonnaud, of which I have spoken in my two preceding letters. This process for photographing in colours has the advantage of being much less costly than that of M. Vidal, and of being much more rapid in working. In fact, by means of it there is realised the direct association of colour with photographic action, for the layer of colour, and the photographic print which goes to complete it so effectually, form one of the same body. Henceforth we shall have no gelatine film to form—a film producing more than one inconvenience, for it is liable to swell unequally, or otherwise to deteriorate after a time, under the influence of heat, or of cold, or of moisture. It cannot be denied that the application of the method of M. Germeuil-Bonnaud would extricate the management of the *Moniteur Universel*, or of the *Publications Periodiques* (if the official title be preferred), from a serious predicament; but I am in great doubt whether they will have the opportunity afforded them. As I mentioned in my last letter, on the best authority, a joint stock company has been formed for working M. Germeuil-Bonnaud's process, and I may add, without fear of contradiction, that some of the greatest names in this country will be found upon its list of shareholders. Whatever the state of the case may be, however, I shall not fail to keep the readers of the PHOTOGRAPHIC NEWS informed on the subject.

Proceedings of the Photographic Society of France.—The presence of Mr. Woodbury, your distinguished fellow-countryman, was not the least of the attractions at the meeting of the Photographic Society of France, held on Friday last, the 7th inst. Mr. Woodbury was welcomed by the members present in a most flattering manner, and was received with all the honour due to a man to whom our art owes so many discoveries, but who is never content to rest upon his laurels. Of his continued researches he gave a further proof at the meeting itself, by exhibiting a new actinometer which he has recently designed. This consists of a small piece of apparatus the shape and size of a watch, provided with a circular frame divided into

sectors, which are coloured with the different tints impressed on photographic prints, from the lightest to the darkest shades. In the centre is an aperture through which the paper that has been exposed to the light can be examined, and an inference drawn of the actinic effect that has been produced: it is only necessary to compare the tint on the paper with those in the surrounding sectors to obtain a sure guide to the requisite length and degree of exposure. This new apparatus is much easier to work with than the actinometers generally in use at the present time; it is founded on the same principles as the old ones, but possesses very many advantages over them, which the photographic public will not fail to appreciate. M. J. Audouin showed a drying box of his own invention for drying plates in the gelatine processes. It is intended to act by means of a current of cold air produced through an aperture in the lower side of the box, that can be opened or closed to any required extent, corresponding to a chimney fixed on the upper side. There is an arrangement in this chimney for placing a lighted spirit lamp to produce a draught. The whole apparatus is as ingenious as it is practical: it is intended to accommodate plates of twenty-one by twenty-seven c. met., but any plates of a less size can be dried in it, as it is furnished with shelves on which they can be rested. Some photographs taken by aid of the luxograph were exhibited at the meeting by Mr. Harrison, and some others taken by various kinds of artificial light were also shown; but as they were not passed round, we had no means of forming an opinion regarding them. Among the other subjects of interest brought forward at this meeting was the declaration of the result of the prize competition for the best travelling camera; and also a communication sent by M. Magny on drawing films off the negative and transferring them to paper. The last subject on the agenda paper was a very valuable paper by M. Bary on the different substances that had been proposed as substitutes for yellow glass. This paper was illustrated in a most interesting manner by the projection on the screen of the oxyhydrogen lamp of the spectra of these substances.

The Société Française des Archives Photographiques Historiques et Monumentales.—This society, which has now become firmly established, and largely extended, has succeeded in obtaining from the *Mairie* of the 9th *Arrondissement* of Paris the use of a hall for holding its meetings and exhibitions. Its first archaeological excursion for this season is fixed for the 6th April next, when photographic demonstrations and experiments will be undertaken. The committee of management of the Society has recently, at a meeting, drawn up a programme of most interesting excursions: this commences with an excursion to the valley of Charouse, a charming spot, not only replete with effects that satisfy the senses of the poet and the painter, but also rich in historic recollections. There are to be found in this valley bits that meet the taste both of the photographer and the archaeologist. Lying within easy distance of Paris, it has often been a source of inspiration to artists; it has the combined advantage of possessing magnificent woods and panoramic views, and at the same time curious out-of-the-way corners full of interesting associations. The value of these recesses, which are like sweets stored away in small boxes, is heightened by the fact that they are in the immediate neighbourhood of the celebrated *Chateau de Dampierre*, the residence of the ancient family of De Luyes.

THE USE OF DRY PLATES IN THE STUDIO.

BY C. FERRANTI.

FOLLOWING up several articles which have been published from time to time on this subject, it may prove useful to those who are desirous of investigating the properties of dry plates to know what has been gained by experience during the last six months. It is not desirable to enter into the merits or demerits of different kinds of plates produced com-

mercially, and consequently the information to be given must stand without these details. Without wishing to go quite so far as to say that nothing but "joy, comfort, and peace" will hereafter be the photographer's lot if he avails himself of the great advantages which are offered to him by the use of dry plates for his daily work, it can be broadly stated that by their use he can save himself much trouble and annoyance, and in many instances will be able to accomplish the hitherto impossible.

That a somewhat modified arrangement of dark-room will be necessary, and a little fresh experience acquired, before successful work can be relied upon, are not matters to frighten the most timorous, if they will bear in mind that the object to be gained is well worth the trouble. As an encouragement to beginners, it may be as well to state that plates and developer can be purchased. All that is left to their sagacity to accomplish is to follow carefully the instructions laid down. These ready materials are a great boon, which those only who have lived long enough to remember the time when to begin photography was also to begin a chemical manufactory can fully appreciate. The judicious division of labour has done a great deal for the rapid advancement of the art-science of photography.

Somewhat greater precautions than those generally taken to develop collodion negatives should obtain in the matter of dry plate work, but it is not necessary to place oneself in complete darkness. Naked gas-lights must be avoided, and the light, if practicable, admitted from the outside through a double thickness of ruby glass. Many slides can always be kept ready charged, and the development can be delayed for hours and for days to suit the convenience of the operator.

Development by the use of ferrous oxalate will be found to meet all requirements and to realize all expectations. This solution is used over and over again, and only requires very little attention to be kept in good working order. At first, the appearance of the plates is likely to prove misleading, inasmuch as greater density is necessary than in collodion plates, which do not alter much after fixing. Here is the case to say that a little experience will be useful.

To avoid frilling, an alum bath, composed of four pints of water in which four ounces of alum are dissolved, is used with complete success if the plates are plunged in it after washing, both after development and after fixing, before final washing. The best mode of drying the plates is to leave them standing on shelves covered with blotting-paper, and at such convenient distances from each other that the air can circulate freely between them. The next morning a little gentle heat from a fire (not from a gas-burner), applied to the back of the plate only, will complete the operation. When perfectly dry, these plates will be ready for retouching or printing, and do not require to be varnished, provided care be taken to keep them dry. Too long exposures generally give weak grey plates; the shorter ones mostly result in brilliant negatives.

Much more will have to be said in connection with this new mode of working which cannot find a place in this article, of which the aim is to assure those who are anxious to study an interesting and new phase of their art that they have nothing but pleasure to expect from their labours, while no great departure from acquired habits is needed beyond an easier and pleasanter way of working. The most conservative will be induced to try a process so little hampered by formulæ or technicalities. Professional photographers must welcome this valuable addition to their tool-chest, and will not be long in acknowledging that in point of execution the dry-plate holds toward the wet the position of the Martini-Henry rifle toward the old flint lock.

REFRACTORY STOPPERS.

BY F. A. BRIDGE.

SOME of your readers may find a difficulty in removing stoppers from bottles occasionally. I never knew the following method to fail. Hold the neck of the bottle in

the steam from the spout of a tea-kettle, and keep turning it round and round so as to heat the neck equally. In a minute or two (sometimes less) the stopper can be removed with the greatest ease.

I need scarcely say that when the neck of the bottle is thick, the heat must be applied more gradually than when the bottle is a thin one.

SOME EXPERIMENTS WITH THE GELATINE PROCESS.

BY H. HOULGRAVE.*

DURING November last there appeared in the *British Journal* two leading articles on the collodio-bromide process, in which the writers endeavoured to show the great advantages to be derived from reducing the quantity of pyroxyline in the collodion much below what is generally used, at the same time considerably increasing the proportion of silver bromide.

The conclusions arrived at were so remarkable that it occurred to me to try if the same principles would not apply to the gelatine process also, and my experiments have been so very satisfactory that I am desirous of bringing the matter before the Association at this early date in the hope that others may take it up, so that it may be thoroughly ventilated before the season for outdoor work arrives. The following will be found a good formula to begin with:—

Gelatine	...	...	...	26 grains
Bromide of ammonium	...	...	26	"
Nitrate of silver	...	...	46	"
Water	...	...	2 ounces	

This makes an emulsion which will be found to run through the filter and flow over the glass with unusual facility. Plates prepared with it give little trouble in development, and dry in about half the usual time. So far as I am able to test the matter at this present season of the year, these plates do not show the slightest tendency to blister or frill. How they will behave in this respect when warmer weather returns I fear is doubtful, as I think it may be taken as a general rule that the less gelatine an emulsion has in its composition the more easily will it be injuriously affected by water at a high temperature. Should, however, frilling occur—and this is the only difficulty to be dreaded—I entertain strong hopes that it may be entirely overcome by a judicious use of chrome alum.

The action of chrome alum on the gelatine film is very remarkable. If five drops only of a twenty-grain solution be added to two ounces of emulsion just before coating the plates, these when dry may be treated with impunity with water at 100° Fahr. Unfortunately chrome alum cannot be used in this way without some rather serious drawbacks, as it renders the film so hard and repellent that development becomes tedious and difficult, and the plates are particularly liable to a peculiar kind of stain. The sensitiveness is also materially reduced, and should the glasses be required for use again they cannot be cleaned in the usual way—that is to say, by merely washing with hot water.

All these difficulties, however, may be almost entirely avoided by combining a portion of glycerine with the chrome alum, and the following will be found a good method of doing so:—Dissolve twenty grains of chrome alum in one ounce of water, and then add half-an-ounce of glycerine. Now, having prepared an emulsion ready for immediate use, to each ounce drop in five drops of the above mixture, stirring at the same time with a glass rod, thoroughly but carefully, so as to avoid the formation of air-bubbles, and proceed immediately to coat the plates. Plates prepared in this manner will not stand water at the same high temperature as when the glycerine has been omitted; but they are quite safe at 80° Fahr., and that is probably quite sufficient for all practical purposes.

* Read before the Liverpool Amateur Photographic Association.

Correspondence.

DRY PLATES IN THE STUDIO.

SIR,—In your remarks upon Mr. Hazard's very practical and interesting paper you have, I think, made a slight and what, perhaps, may appear to be an unimportant error. It is there stated that Mr. Hazard is the first to announce publicly that he had abandoned the wet process in favour of the dry. Now it so happens that at a meeting of the South London, some time since, I made a similar statement, and showed results; but I am not aware that it was ever reported. If, therefore, there be any merit in priority, I beg to claim precedence of Mr. Hazard in the matter, as it was in consequence of what he considered my great success with dry plates for portraits that he was induced to "go and do likewise." Also see my letter in the *Photographic News* January 10th.

The introduction of dry plates into the studio for the purposes of ordinary portraiture is a subject which increases in importance every day, and doubtless will continue to do so as the season advances; for although this may perhaps be considered as being only the probationary period of dry plates in that direction, its general and speedy adoption is as certain to follow as that you yourself have more than predicted it in the pages of the journal over which you preside. It is to be hoped that the Gamaliels of the art phases of photography will not allow this tidal wave of revolution to engulf them, but that they will rise on its crest, and take advantage of this new power to its fullest extent; and then may we hope to see such things done as were never before dreamt of in our philosophy. I find that with those who take up this new method of working for the first time it is too much the habit to form an estimate of the negatives produced by comparing them with a good standard negative taken by the wet collodion process. This practice, however, is most misleading, there being but little in common between them; the only reliable test for a beginner is that of printing, and it is astonishing how soon he will become educated to the requirements of these new negatives.

My own experience tells me that over-exposure is the most easily besetting sin in the working of these new gelatine plates, and it is extremely difficult to produce anything like satisfactory results from such negatives. The prints enclosed are from negatives which have all been taken during the late most unfavourable weather for photographic operations, the plates having been supplied to me by Messrs. Wratten and Wainwright. I may add that I have not taken a single portrait otherwise than by means of gelatine plates for more than three months.—I am, sir, yours truly,

M. COBB,
Instructor of Photography,
Royal Military Academy, Woolwich.

[The insertion of the above was delayed through the Editor's illness.]

PHOTOGRAPHY BY ARTIFICIAL LIGHT.

SIR,—A short time ago, I was engaged by one of our learned societies on a scientific expedition, part of my duties being to photograph the interior and exterior of lighthouses. During our survey, I was much impressed by the various means adopted to collect and disperse the rays of light emitted from oil-lamps and gas-jets, and resolved to try various experiments with these ingenious reflectors, and endeavoured to make them applicable to photography by artificial light. Thanks to the masters of numerous lighthouses, who kindly gave me great assistance, I am happy to say I have succeeded beyond my most sanguine expectations in producing a sharp and well defined negative, both by gas-light and paraffin oil, in fifteen seconds.

My draughtsman is now at work on the drawings, which I trust will be deposited in the Patent Office within a fortnight. Until then I cannot give you full particulars, but am prepared to challenge any system yet introduced of photography by artificial light, and place £50 in your hands to be competed for, if possible, at your office.

As I do not want to be bothered with a number of enquiries at present, permit me to subscribe myself the inventor of the

PERPETUAL PHOTOGRAPHIC PROCESS.

P.S.—I enclose a specimen of picture taken by my mode of lighting, on a Swan's plate, in five seconds. With an ordinary bath, the time of exposure is about fifteen seconds.

[No specimen was enclosed in our correspondent's letter.—Ed.]

Notes and Queries.

A CURIOUS PHENOMENON IN DRY-PLATE PHOTOGRAPHY.

DEAR SIR,—I lately I have been working with dry plates entirely in my studio in fact, have not used the bath for nearly three months, until quite recently.

Two weeks since, I was working with some plates. Seven quarter plates were taken on a very dull afternoon; but, to my surprise, upon developing, all the negatives turned as yellow as amber glass—this was with the ferrous-oxalate developer. Thinking it was a deposit of some salt of iron, I tried to clear it off with pure hydrochloric acid and water, one acid to seven water. This did its work very effectually, but as soon as the plates dried they were as dark as bottle glass.

Now these plates that had dried with no application of acid hydrochloric were still amber colour when dry, so I washed the surface over with water, and then applied the acid solution—this time to clear the whole film very nicely, and thus I saved some of the negatives. With the same developing solution, Messrs. — plates as well as some of my own preparing, turned out first-class. However, thinking something was wrong with the ferrous-oxalate developer, I made use of the pyrogallic acid developer, with just the same result—the negatives just as yellow as amber; so I was compelled to get several of my sitters to come again—this time to use wet collodion; with which, of course, the negatives were perfect.

Thinking that strong hydrochloric acid would act better, I tried. The first two applications all the yellow disappeared, and the third dose caused the film to dissolve, and that disappeared also. On February 18, I tried some more plates (pyro-development), according to the formula given in the News by Mr. J. S. Hazard. The picture developed very rapidly, beautifully soft, but that amber colour still made its appearance, and, worst of all, the plates now stand upon the shelf, all the films in a finely reticulated condition, and useless.

It is only right to state that I have many dozens of portraits taken upon the same plates really first class, also upon the plates of Messrs. — but for the present what dry plates I do use I shall prepare myself, and always have the bath at hand, in case of any mishap.

For out-door work, such as landscapes, or views generally, I prefer the common Becchey plates, which in my hands have proved all that the Canon says of them, and as a proof of such, I beg to enclose you eight views, two of the old church of Reculver, near Hern Bay; one of the Granville and Victoria Gardens; two of the renowned Granville Marine; one of Ramsgate Sands; one of the old Church, Minster, Thanet; one of Pinckney Corner, Minster Lane, and a part view of St. George's Church taken on a plate with tea preservatives, and from these you will be able to judge for yourself.—Yours truly,

A. J. JARMAN.

WRINKLING OF GELATINE PLATES.

DEAR SIR,—Will any of your correspondents kindly inform me in your next PHOTO. NEWS the reason of the following failure. I beg to say that I am working gelatine dry plates for C.D.V. portraits, and developing with pyro and ammonium, &c., and fixing with hypo, and am very well pleased with the negatives till they begin to dry; then the film wrinkles like a map, and cracks in a wet state, and the negative begins to lose the density.—Yours,

GRATEFULLY.

SPILLING HYPOSULPHITE OF SODA.

DEAR SIR,—In answer to an inquiry in the NEWS of last week headed "Notes and Queries," respecting the hypo in the cellar, I send you a simple remedy. If "Q. H." will cover the asphalt floor with dry wood ashes, and let them remain long enough to absorb the moisture, then sweep out with a dry broom, and have ready

a sufficient quantity of boiling pitch, and with a large brush give the floor two or three coats, I think he will have no difficulty in keeping our friend hypo down below.—I am, yours respectfully,
A PERFECT CURE.

CITRIC ACID IN THE SILVER BATH.

Will Mr. Valentine Blanchard kindly inform your readers where he purchases his nitrate of silver and citric acid that behave in the unchemical way stated? When a solution of pure citric acid is added to a solution of silver nitrate (neutral) as generally sold, no precipitate whatever should take place.

I should be happy to examine a few grains of these chemical for him.
CHEMISTS.

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE monthly meeting of this Society was held on the 6th March, at the Society of Arts, John Street, Adelphi, Mr. W. Brooks, Vice-president, in the chair.

The minutes of the last meeting were read and confirmed.

The CHAIRMAN said that since the last meeting the Society had sustained a very serious loss by the death of an honorary member of the Society, Peter Le Neve Foster, Esq., who had been an esteemed and valued friend to the Society; and it had been proposed and carried in committee that the President of the Society (the Rev. F. F. Sathan) should write a letter of condolence to the widow and family of the deceased, and he was sure that the whole of the members of the Society would fully endorse what had already been done in committee.

Mr. ALEXANDER COWAN was proposed and elected member of the Society.

Mr. FOXLEE asked whether it was the intention of the Society to discontinue sending to members the post-card notices of the meeting.

The CHAIRMAN said that it was the intention of the Society to discontinue sending them, and members would always find notices of the Society the week previous to the meeting in both the PHOTOGRAPHIC NEWS and the *British Journal*.

A paper was then read by the Secretary from Mr. W. J. ANKORN, on "Imitation Porcelain Transparencies."

Mr. R. V. HARMAN read a paper on "Artificial Lighting" (see page 122).

The CHAIRMAN said he had seen portraits taken by artificial light in a much less time than Mr. Harman stated. He had seen a fully-exposed cabinet portrait taken in sixteen seconds, which was less than half the time mentioned (thirty-five seconds).

Mr. CLARKE (Messrs. Alder and Clarke) then handed round for the inspection of the members some specimens of portraits taken at a fancy dress-ball at Chelsea, which were very much admired by the members; he stated that the negatives were taken on the average of eighteen an hour; the exposures were from two and a-half to seven seconds, gelatine plates being used. He would also call attention to the extreme softness in the shadows. Prints from many of the negatives had the appearance of being highly retouched; but such was not the case. The bust and vignette heads had been taken in various parts of the country these were taken by the ordinary wet collodion and bath process with exposure from twelve to seventeen seconds. He generally used himself a Dallmeyer No. 2b, with about the second stop.

The CHAIRMAN remarked that the softness of the shadows and lines in the face could be accounted for, the source of light being low and diffused; whereas in an ordinary studio he always considered there was too much top light used from the skylight. It might be remembered by some that some few years ago he had remarked that the reason why people in photographs as a rule had such a bad expression was, in his opinion, due to using the top light, and that scarcely any person was ever seen under the same conditions of light and shade except in the photographic studio; and until such a system was adopted as that the light was the same as the light persons were generally seen in, exceedingly unnatural expression would invariably result; and he might add that he had noticed that, as a rule, the lower the source of light, the better would be the expression. And it was highly essential, in using these artificial lights, to have a flue with plenty of draught to carry off the poisonous fumes.

Mr. BOLAS stated that the best plan he had found, as he had stated before, was to have a suitable place built outside of a window, so that it would not then be possible for any of the highly poisonous

fumes to enter the room, but thought it would be advisable to give notice to the fire engine station in the neighbourhood that things were all right.

Mr. A. L. HENDERSON said he remembered well many years ago, when he was using artificial light of a similar kind, for taking positives on glass, that several times he had several fire-engines at his door, which became a nuisance.

Mr. JACKLETT stated that he was using Moule's lamp, and his average exposure for cartes was twenty-five seconds with Dallmeyer's 2B with the second or third stop, using the wet collodion process.

Mr. HARMAN, in his reply, said it must be understood that the specimens he brought were the results of his whole experience in artificial lighting, and not as specimens of photography, and it could be easily seen that there really was something in it. The whole of the apparatus that he employed were very rude, and did not cost more than five shillings at the utmost.

Mr. A. L. HENDERSON said he had worked Moule's lamp successfully for busts and vignette heads, but considered it a failure for full-length portraits, the lower part of the picture always being much too dark to be in harmony with the other part of the picture.

Mr. ANCKORN stated that he was making an apparatus in tin which he hoped to have finished shortly, and would then give a description of it.

Mr. BOLAS asked whether any gentleman had tried three lights in different positions—for instance, one above the other.

Mr. BRITTLEBANK said he had just constructed a simple machine to burn twenty thicknesses of magnesium ribbon at a time, and found it answered perfectly without any clockwork; by slowly turning a handle it worked effectively.

Mr. F. A. BRIDGE asked how he (Mr. Brittlebank) managed to light twenty ribbons at a time.

Mr. BRITTLEBANK, in reply, said he always kept an ordinary bat's wing burner fully on, which lighted the ribbon in the first instance, and kept it burning continually, and he found no difficulty whatever.

Mr. AYRES exhibited some very ingenious apparatus for copying photographs, &c., whereby they were always in position in the centre of the lens, and square, which saved a lot of time being wasted. He also exhibited a contrivance for holding a negative, and masking any part of it—for instance, to copy a single figure, or any particular part of a large negative.

Mr. HARRISON also exhibited one of similar construction.

Mr. HENRY wished to call the attention of members to a dark slide having a shutter without hinges, by having a small spring fillet in the edge of the camera, so that when the shutter was withdrawn, the spring piece closed the opening; it could readily be adapted to any camera.

Mr. F. YORK handed round for inspection two negatives which Mr. Brooks had enlarged for him from small negatives (the enlargement being nearly three and a-half in diameter). He was quite surprised at the results. They were done by the wet emulsion process, the subjects being some of the animals in the Zoo, which he considered very little inferior to original negatives.

Mr. F. A. BRIDGE read a paper on "Finance," which was rather humorous.

Mr. CLARKE consented to read a paper at the next meeting on his "Experiences in Photographing at the Fancy Dress Ball."

Mr. BRITTLEBANK also promised a paper bearing upon "Artificial Lighting."

A vote of thanks was then passed, thanking the gentlemen who had contributed to the evening. The proceedings then terminated.

EDINBURGH PHOTOGRAPHIC SOCIETY.

The fifth ordinary meeting of this Society was held in 5, St. Andrew Square, on the evening of Wednesday, the 5th instant, when the President, Mr. LESSELS, occupied the chair.

The following gentlemen were unanimously elected ordinary members of the Society: Messrs. Robert Pearson, James Bertram, William Johnston, John Rattray, Thomas A. Croal, and William Dougall.

Dr. THOMAS DRINKWATER, F.C.S., then read a paper entitled "Notes on the Use of Artificial Light in Photography" (see page 124).

The PRESIDENT, in the name of the Society, thanked Dr. Drinkwater for his interesting paper, and invited Mr. Asher, whose name was prominently connected with the matter in the paper, to open the discussion.

Mr. ASHER said that, from the limited experience he had had with the Luxograph, he was not prepared to enter into minute details; but he was fully satisfied that the apparatus was capable of producing the work claimed for it by the patentees.

Mr. BASFORD said he had been much interested in Dr. Drinkwater's paper, more especially in that part treating of the recent advances in gas illumination. The alba-carbon exhibited by Dr. Drinkwater was an attractive novelty. Mr. Basford could not agree with the statement that a blue medium would impart actinism to an artificial light efficient in that property, as if a light did not primarily possess sufficient chemical power its passage through blue or any other media would simply modify the intensity of existing rays without adding to them in any way. In regard to the form of reflector, he fancied that a true parabola which reflected parallel rays would tend to produce heavy shadows, whereas diverging rays impinging on surrounding objects, and reflected from them, would help to remove this stumbling-block in the way of artificial illumination. Through the courtesy of Mr. Asher he had on the previous evening had an opportunity of witnessing the luxograph in action; and with an exposure of about twelve seconds had taken a whole-plate negative, which, with four prints from it, were handed round for inspection. The prints possessed distinctly different characteristics, and showed that the negative was one from which any desired result could be obtained, a quality highly valued by all intelligent printers.

Mr. W. H. DAVIES said the past history of the Edinburgh Photographic Society showed that it had devoted more attention to artificial illumination as an aid to photography than any other Society. Sixteen years ago, Sir David Brewster (then the President) and Mr. W. Neilson had their photographs taken in the same room in which he was speaking, by employing pyrotechnic compositions, and also by ordinary house gas, and the Society's albums contained prints from negatives produced on these occasions. The Society, many years ago, had before it a Moule's Photogen, and the apparatus was still to be found in the cellar of one of its members. Speaking from recollection, this old apparatus combined all the essential elements of the more recent Luxograph.

Mr. J. M. TURNBULL corroborated the remarks of Mr. Davies in reference to the Photogen, and said that in his opinion artificial lighting for photographic purposes was as far advanced twenty years ago as at the present day. He agreed with the remark that a coloured medium, simply acting as a filter, obstructed some illuminating or other rays, but in no sense added actinism to the light.

Mr. M. G. DOBNIK said that although a patent apparatus had been constructed twenty years ago, the very fact that it had become obsolete was evidence that it was unable to produce satisfactory work, and hence it never gained for itself a permanent position. Since that time, scientific knowledge had developed the idea, and the results, as exhibited by the prints on the table, gave ample evidence of the practical value of the latest outcome of these investigations.

Mr. W. NEILSON said that he had still a very vivid recollection of the toasting he got on that memorable night mentioned by Mr. Davies, and the effects of which were visible on his cheek for nearly a fortnight afterwards. He considered the photographs not equal to those obtained by sunlight, and in his opinion pictures taken by artificial light would never favourably compare with those taken in the usual way.

Mr. CRAIG-CHRISTIE expressed himself highly gratified with Dr. Drinkwater's paper, and suggested that possibly one of the hydro-carbons possessing more carbon than those hitherto experimented on, for illuminating purposes, might be found to lend itself to the perfecting of ordinary gas for photographic purposes.

Dr. DRINKWATER replied that carburetted hydrogen was only capable of consuming a certain proportion of carbon, and that if that amount was exceeded, the light was impaired, and a smoky flame resulted.

Mr. J. M. TURNBULL next exhibited an ingenious modification of the spirit lamp, and its adaptability to heating purposes where a Bunsen would generally be used when gas was available.

The lamp consisted of a reservoir, connected by a flexible or rigid tube to a wick-holder. The latter had an outer tube so constructed that by a slight turn it would remain at any height above the wick-holder, and so controlled the consumption of spirit and the size and heat of flame.

The lamp was shown attached to a Chadwick's "Oxygen Generator," and was quite as effective as the patent Bunsen originally supplied.

Mr. W. H. DAVIES laid on the table Thompson's recent work on

Cyprus, and also Rosatti's views in the same island. After these had been examined, votes of thanks terminated the proceedings.
W. J. BASHFORD, Hon. Cor. Sec.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting of this Association was held at the Museum, Queen's Road, Bristol, on Wednesday, the 6th instant, Mr. T. DAVEY in the chair. The minutes having been confirmed,

Mr. STEVENS, thinking that there might be some present who had not seen the little pocket camera called a "scenograph," had brought one with him. He remarked that all three of the legs being rigid was a great drawback, as it rendered it almost impossible to stand it on a piece of very sloping ground, the danger of its falling over being too great. This was a great fault, and required remedying before it could be looked upon as at all perfect.

The CHAIRMAN thought the camera very light and portable, but feared it partook more of the character of a toy than of a piece of apparatus for really hard work. It was certainly very light, but he feared that that extreme lightness was in some respects against it, as with a more solid camera buildings could be photographed if the wind were blowing a little, but he thought the slightest breeze would cause the scenograph to vibrate.

Mr. H. A. H. DANIEL said he thought the nicest thing about it was the ball-and-socket head to the stand. He then reverted to the subject of nitrate bath-holders, and stated that he had used an ebonite one for some time, being so pleased with it on account of its lightness. He feared, however, that his opinion had changed, as some little time since his ebonite bath had cracked, even with careful usage. He had it repaired, a complete strip of fresh ebonite being placed over the fracture. Notwithstanding great care this had also cracked, so that he feared ebonite baths were not strong enough for use out of the darkroom, in which place their lightness was of the least value. When last in London, he called at Mr. Moore's, in High Holborn, and saw the india rubber-lined wooden baths he advertised, and could not help fancying that in them the right thing had at last been discovered. They were light and yet very strong, and wore, of course, perfectly harmless to the nitrate of silver, being lined with pure rubber.

Mr. E. BRIGHTMAN could quite endorse Mr. Daniel's remarks, having lost the whole of a bath last season through the ebonite holder breaking. He had now purchased one of those spoken of by the last speaker, and was much pleased with it.

Mr. POWELL (of Bath) asked if anyone had seen the wood dippers, made in such a manner that the plate could be inserted and drawn out of the bath face down.

Mr. BRIGHTMAN replied that he had, and explained the mode of making the catch for the top of the plate.

Mr. DANIEL said he saw one in use for large sizes last summer at Lynton, and the owner expressed his opinion as to its great usefulness.

Some further discussion on the places that would most probably be visited during the coming summer concluded the meeting.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The proceedings of the meeting of this Society held on Tuesday evening will appear in our next. We have not space in the present issue for the report, which, in the absence of the papers, is of slight interest.

CETYWAYO THE USURPER (from a Fashionable Standpoint).—She was a Shop-window Beauty—a Photographer's Pet—a Charmer of the Camera; and though her likeness was frequently but a negative delight, her life was a positive pleasure, for she basked in the rays of popularity. But one morning she was taken with a fit of melancholy. Her husband observed it. She had, as he well knew, been previously taken with a befeater hat, taken with a bird, and taken with a parasol. In order to comfort her he now took her hand—a very pretty one—which would have gained even the admiration of the fastidious Louis Carte-orze, and exclaimed: "Oh, confido in me, beloved one! Pour all your grief into my bosom. A husband's bosom especially

lens itself to such uses. Tell me everything, my more precious than silver-Bathsheba!" "My heart is very heavy, love," she replied. "Could you but see it, you would call 'Loadyun!'" Such are the aberrations of grief. She meant collodion. "Not I, of all-bu-nen, if I thought 'twould add to your distress. Tell me your cause of sorrow, my sweet one, *s'il vous dry-plate*," he implored, speaking French with an English accent in his agitation. She yielded. "I mourn," she sobbed, "because last week the dreadful burglar person sold two hundred more than I did, and—and—this week that quite too awfully ferocious-looking Cetywayo is going off better than either of us!"—*Funny Folks.*

PHOTOGRAPHIC REPRESENTATION OF MOTION.—The *English Mechanic* says:—"It is known that Mr. Muybridge, of San Francisco, has recently succeeded in taking a large number of instantaneous photographs of the various attitudes assumed by a horse in motion, even when galloping at the rate of nearly twenty metres in a second. These figures are reproduced in *La Nature*, Dec. 14, and are of great interest in many ways. Some of the attitudes are very unexpected. M. Marey, whose researches and apparatus have thrown great light on animal movements, has been much struck with Mr. Muybridge's figures, and invites him to give his attention to certain problems of physiology that are difficult to solve by other means. One of these is the flight of birds. He suggests the idea of a kind of photographic shot seizing the bird in an attitude, or better, a series of attitudes, showing the successive phases of movement of its wings. Mr. Muybridge has shown his ability to do this. What beautiful zootropes (M. Marey also suggests) might be obtained by the method! We might see in their true paces all sorts of animals; it would be a kind of animated zoology. As to artists, it is a revolution for them—for it furnishes the true attitudes of motion, those positions of the body in unstable equilibrium which a model cannot pose in."

To Correspondents.

PLATINO.—We have had no personal experience with the platinotype process, but have published all the available information on the subject. We regret, therefore, that we cannot help you. One of the difficulties of a patented process is, that there is little temptation to experiment with. None but licensees are expected to practise the process, and they are supposed to receive full instructions from the licensee.

ARTHUR GYNNE.—In our last volume you will find various detailed articles, containing precise instructions. One on p. 2, and again on pp. 513 and 524, occur to us as containing valuable hints. There will shortly be other articles on the subject. A paper was read on Tuesday night at the Photographic Society, which will appear in our next.

J. L.—We regret that we do not know of any one who is likely to supply Pellet's paper commercially. 2. The chief cause of negatives becoming stained with silver from contact with sensitive paper in printing is the paper being placed in contact when the paper is slightly damp. Such stains may be easily removed by means of a tuft of cotton wool and very strong hypo solution or weak cyanide, and then rubbing with clean water.

W. W.—We do not know where you can obtain the emulsion in question, as it was made by Mr. Brooks himself. By ordering it you could no doubt obtain it. Possibly Mr. Brooks might be willing to prepare you some. There is a difference between the results of moist emulsion and dry emulsion. We cannot tell you whether bath plates would produce similar results. It may be worth while to try.

G. TAYLOR.—It is very difficult to remove the varnish from a negative, as it is not merely on the film, but in it, permeating the whole structure. Soaking and repeated flooding with strong alcohol is the only agent you can with advantage use. A strong solution of ammonia may be used, and sometimes answers. We prefer to reduce the density by the use of alcoholic solutions. 2. We know nothing of the gentleman you name, beyond the fact that he has, we understand, been for some months out of town.

COLLODION.—The defect you describe might proceed from a variety of causes. Thinness of image is often the result of using newly iodized collodion: when the collodion becomes a little more mature, the negatives may possess more vigour. Or it may arise from the collodion being somewhat thin or wanting in body from the use of insufficient pyroxylene. A variety of other causes might also produce a similar result.

R. W. THOMAS.—Many thanks. We shall probably have a note on this subject in our next.

WARWICK BROOKS.—Thanks. Some remarks in our next; Several correspondents in our next.

The Photographic News, March 21, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

GELATINE PLATES WITHOUT GLASS—A NEW USE FOR COLLODION—MAP-MAKING IN FRANCE AND AUSTRIA.

Gelatine Plates without Glass.—The continued employment of gelatine plates in the studio, as well as out-of-doors, naturally sets one thinking about the improvements we may, in the end, secure by throwing over collodion. If gelatine in a dry state can be universally used for the sensitive film, why cannot we employ the material prepared in the form of sheets of a tough and transparent character, and thus do away with the use of glass? There should be no reason why this could not be done. If the gelatinous bromide film cannot be toughened by the admixture of alum or other substance that might interfere with its qualities as a photographic body, then the strengthening and toughening can be easily carried out by mechanical means. For instance, a layer of leather collodion—or, in other words, a collodion to which a small quantity of castor oil has been added—would make a capital support, and render the films at once capable of manipulation without risk. Imagine a traveller setting out with films of this kind, a stock that weighs comparatively little, and without any risk from breakage. Hundreds of such gelatine sheets might be packed together, and guarded far more easily from the light than dry films on glass. Possibly, the machinery used for rolling gelatine, and which has now reached a high pitch of perfection, could be brought into play, for under these circumstances the surfaces are made as smooth and even as glass. Could this be done, we should have solved the problem which, for many years past, has been set before photographic experimenters to propound by the Vienna Photographic Society. One of the Voightlander gold medals has, for some time, been offered by that Society to whomsoever should produce a transparent pellicle, either to replace glass in negatives, or render that vehicle unnecessary for work in the camera; and if a tough and sensitive gelatine film can be prepared, there is no reason why the producer thereof should not claim the medal as his right. So far as our experience goes, the principal difficulty in respect to these gelatine plates is not to expose them too long. We have some plates in our possession that have now been kept for four months, and these proved over-exposed in taking a portrait with a period of twenty-five seconds at a time when thirty seconds would have hardly sufficed for a wet plate. By curtailing the exposure yet another five seconds there was a marked accession of brilliancy, while no lack of detail could be discerned. Some difficulty may be experienced at first by the necessity of developing in a dish, but dry plate workers are used to this, if portraitists are not. The drawback to developing a gelatine plate in the hand, or upon a pneumatic holder, is that if the process is rather long, it is apt to become tedious, and the operator is tempted to hurry; while, again, any dust particles flying about, if once they settle upon the gelatinous film, are not to be removed by washing. The latter difficulty at once disappears if you keep the film covered with the developing liquid in a dish, and you can then allow plenty of time for development; there is, however, the drawback that the plate is not so ready for examination against the light as when it is held in the hand.

A New Use for Collodion.—Collodion has lately been brought prominently forward as a material for capsules. It is not unsuited for such a purpose, although when upon the bottle the capsule, maybe, appears rather more useful than it really is. The stoppered bottle is simply dipped into a vessel of collodion and bronze (or other pigment), and in this way capsules of brilliant finish and of any desirable colour are furnished. If the bottles are not subjected to very rough usage, no doubt collodion capsules, provided the collodion is properly prepared, would answer

the purpose of protecting the cork from damp; but they would be liable to damage from abrasion. For this reason, however strong and metallic they may appear, a collodion capsule is hardly likely to supersede those of lead or tin with which we are familiar. A tough collodion, and not a pulverulent one, is, as a matter of course, the best for this purpose, and we have no doubt that the addition of a little castor oil would improve its consistence. Now that photographers, turning their attention to gelatine plates, are likely to have less to do with collodion, it would be well indeed if other demands should arise for this important material.

Map-Making in France and Austria.—The French Government, according to our Paris Correspondent, is making good use of photography in improving the maps of the country. There seems to have been a difficulty, inherent to a military state like France, in getting two departments to work together, a civil one and a military one. Henceforth, since France has now placed civilian power above military, and reversed the previous order of things, there will doubtless be less difficulty in fusing different departments; but a long time has been necessary, we are told, to bring this about in the present instance. There were excellent maps in the Staff Office of the French War Department, but as this office does not recognize officially the designs and transactions of the Department of Roads and Bridges, which is a branch of the Home Office, the latter had no means of obtaining these maps. When, however, the inexorable rules of officialdom had been satisfied, then it was necessary that the Ordnance maps should be put on a scale suited for being corrected by the various civilian road-surveyors, and to do this the aid of a photographic establishment was invoked. The civilian surveyor of every district will receive a map—or, rather, a sheet—all of which will be on the same scale, and upon these all the necessary changes will be noted, where new ones have been made, where old ones have been closed, or where woods have been cut down. Things which were of no importance to the military surveyor will be noted and entered by the civilian, and in this way France hopes to secure in time a map equal to that produced by the German military engineers. In Austria they are also making considerable use of photography in map-making—not, be it understood, simply as an aid to the metallic engraving of the map, but in lieu of engraving altogether. Large maps with clear black lines are, in the first place, prepared by a draughtsman, and this is afterwards photographed in several sizes, and put upon stone or zinc for printing from. The plans being in the first place specially drawn for photographing, very clean negatives are the result, while the time and expense thus saved, by doing away with engraving upon metal, is something marvellous. So far, we believe, Austria is the only power which makes such extensive use of photography; but the art is, as our readers know, applied in one way or another at most geographical institutes in this country and abroad. If we mistake not, photo-lithography has likewise been much used lately in the production of some small popular maps selling at extremely low prices in the metropolis just now. Being reduced from engraved originals, their fine lines were occasionally a little rotten and intermittent; but these defects would not be forthcoming in the case of photo-lithographs prepared from originals specially drawn for the purpose.

GELATINE EMULSION PROCESS.

BY C. BENNETT.*

I REGRET that in bringing this matter before you this evening, in response to an appeal from the Assistant Secretary, that I have so little that is new to introduce to your notice beyond what I have already published. But in view of the

* Read before the Photographic Society of Great Britain.

extraordinary interest which is evinced at the present time—an interest which appears to be increasing daily—in all that is connected with gelatine emulsion, I trust you will permit me to refer to one or two points to which I attach the greatest importance in their bearing upon the future of this process.

My attention has been chiefly directed—as many of you are aware—to the production of the highest degree of sensitiveness attainable; but while keeping in view the main object, I have not lost sight of what is equally desirable—*quality of result*. In order to secure the combination of these two qualities, I recognized the necessity of a strict adherence to one leading principle, namely, the thorough elimination of every cause which might lead to the production of fog, however slight, either in the emulsion itself or in the prepared films. This idea was embodied in the formula and directions I published some twelve months ago, and I will now proceed to explain the reasons upon which my process—if process it can be called—was based.

In the first place, I will speak of the salting of the emulsion. It is very possible that opinions and tastes may differ with regard to the best proportions of silver bromide and of gelatine which should be contained in each ounce of emulsion, and it is a matter to which I do not attach paramount importance, though, as the result of very numerous experiments I prefer, the quantities given in my formula of last year. But I insist, for reasons I shall state, that the relative proportions of soluble bromide should be such as to leave a decided excess of the former in the finished emulsion. This, I am aware, has been recommended by others long ago; whilst, on the other hand, some writers have stated a higher degree of sensitiveness to be obtained by fully converting the bromide or by having the silver in excess. Without denying the possibility of using a fully converted emulsion, or even one which has contained free silver, I strongly deprecate such a course, for besides introducing difficulties which do not exist in the working of an emulsion made with free bromide, the use of the full equivalent of silver nitrate is not only unnecessary in order to obtain the highest degree of sensitiveness, but it actually defeats the object in view. The more palpable difficulties which it introduces consist in the extreme tendency to fog and abnormal reduction under the action of the developer, and the absolute necessity for the use of restraining bromide, and also the great care required at every stage of the operations, even when comparatively long exposures are to be made.

But in addition to these, there appears to be a danger of the formation of an organic compound of silver and some portion of the gelatine, which suffered reduction even though un-exposed, causes, in many cases, the defect known as “red fog,” while in other instances it takes the form of a general veil, obliterating all the fine details, and rendering anything like strong or forced development a matter of utter impossibility.

Now, if the relative proportions which I have previously laid down—seven grains of ammonium bromide to eleven grains of silver nitrate—be adhered to in all cases, whether the actual quantities recommended in each ounce of emulsion be altered or not, there is no danger of the formation of this deleterious compound; and provided that due precautions are taken in other respects, the films prepared from such an emulsion will be found capable of any degree of forcing with a developer entirely devoid of restraining bromide, and containing such a quantity of alkali as would inevitably fog an emulsion prepared with excess of silver.

There is one feature I have noticed in connection with the complete saturation of the soluble bromide, viz., that after passing the point I have named, the nearer we approach the full equivalent of silver, the thinner and more transparent do the films become; in fact, with the

full quantity of silver, the dried film scarcely appears to contain any bromide at all, though actually it contains more than the denser films obtained with my formula.

The next point which deserves my notice is the necessity for using, as far as may be possible, a perfectly non-actinic light, both in the preparation of the emulsion and plates and in the development. It is some years since this requirement first attracted attention in connection with bromide plates, but the full extent of their susceptibility to the action of rays of low refrangibility has only recently been fully recognised, and it is a question at the present time whether it is possible to preserve gelatine films from actinic action under any circumstances short of complete darkness. To work under the latter condition is an obvious impossibility. All that can therefore be done is to reduce the chances of actinic action to a minimum, by using, as I have directed, two, or even three, thicknesses of ruby glass in the window of the operating room, and to expose the sensitive preparation as little as possible to the small amount of light thus obtained.

The reason of this is obvious, namely, to preserve the plates scrupulously from the influence of all light except that which passes through the lens to form the picture; or, in other words, this is another safeguard against fog—in this case produced by actinic influence as distinguished from the chemical fog arising from free silver.

If such precautions are observed in every stage of the operations as to lead to the production of a film absolutely free from any trace of incipient fog or veil, the restraining action of the gelatine in combination with the silver bromide will be sufficient to protect it from any abnormal reduction under the most powerful development. It is questionable whether in practice it is possible to prepare a film which is absolutely free from every trace of fog; if such were possible, we should no doubt find the sensitiveness of these plates only limited by the strength of the developer it was possible to apply to them. Without going to the extent of *absolute* freedom from fog, if the directions I have given as to the arrangements of the light be strictly attended to, the result will be films which are capable of outstanding the action of what would have been considered a few years ago an *impossible* quantity of ammonia, and that *without the addition of the slightest trace of bromide*.

I cannot lay too much stress upon this matter of the thorough elimination of fog, as upon that one point hinges the whole question of sensitiveness—in gelatine plates, at least. There seems reason to believe that these plates differ from others in this respect, that the most feeble actinic impressions may be rendered visible by the exercise of a little care and patience, combined with the use of a sufficiently strong developer. The members of this Society will, I doubt not, fully appreciate the fact that if the film be veiled or fogged, be it ever so slightly, during the preliminary operations, the defect will be brought to light by a strong developer, when it might probably escape a weaker one. The application of such a film is therefore limited—its practical sensitiveness deteriorated; for evidently the useful action of the developer must cease at the point at which the veil or fog comes within its power, all actinic action below that point being lost in the general reduction.

I will now allude to the chief feature in my process which *directly* affects the sensitiveness, namely, the extension of the period during which the gelatine and salts are allowed to emulsify or ripen. I have in my own practice carried this emulsification to a period of seven days, with the result of obtaining a continuous augmentation of sensitiveness, accompanied, as might be expected, by an increased necessity for care in the treatment of the emulsion, and a greater liability to fog. With only three days' emulsification I have been enabled to produce results ten times

more rapid than any previously considered impossible—certainly no one had even produced, possibly ever attempted them; and I believe success to be impossible even now, unless my mode of working be followed closely.

This system of prolonged emulsification has been objected to on the ground that it is troublesome, unnecessary, and leads to the formation of an emulsion which is unmanageable from its tendency to fog.

With regard to the first charge, I need say but little: if special results are sought for some little extra trouble must perforce be incurred; but, after all, the extra trouble in this case is slight, if the operations be reduced to a system. As to the statement that prolonged emulsification is unnecessary, I repeat that the very highest degree of sensitiveness is *only* to be obtained by its means. Those who do not require that extreme degree, may content themselves with hours instead of days. Finally, the resulting emulsion only becomes unmanageable when the other rules laid down are shirked. We cannot expect an exquisitely sensitive film to work in a perfect manner if submitted to the comparatively rough treatment which might suffice for a plate twenty times less rapid. If my directions be followed *in their entirety*, gelatine bromide emulsified for the full period of seven days will be as free from fog as one which has undergone but as many hours.

In conclusion, what I claim in connection with my process or mode of working, is the recognition of certain conditions which are absolutely necessary of observance in order to work gelatine emulsion to the greatest advantage.

For some years gelatine has been said to far exceed wet collodion in sensitiveness, but the statement had not been borne out by published results. It was said that gelatine plates could be prepared of such exquisite sensitiveness that it was impossible to use them. Why? Simply because the true conditions under which such plates require to be used were not recognised, or, if recognised, not put into force.

THE APPLICATION OF ARTIFICIAL LIGHT TO PHOTOGRAPHY.

BY DR. DRINKWATER, F.C.S., ETC.*

THE subject of patent law is too sore a point, and would entail too much time, to go into this evening, but I cannot help expressing an opinion that the Luxograph is a patent that can be very easily infringed when we remember it is only an improved modification of the very process which I alluded to at the opening of my paper, the patents for which have expired long ago. This is, however, a subject that we shall no doubt hear more about in a little. After pyrotechnic compositions had failed in fulfilling the anticipations of the inventors, metallic magnesium was tried, and with what at first sight seemed like success. The most perfect lamp for the production of this light was that invented by Mr. Brothers, of Manchester. It consisted of an arrangement by which three ribbons of wire were simultaneously burned, and the light so produced was reflected on to the sitter by parabolic reflectors. The light so produced was both diffusive and actinic, but the expense attending its use was a great drawback, and after a short-lived existence the magnesium lamp and belongings passed into the retirement already sheltering its pyrotechnic companions, from whence, perhaps, some day it will be fished out and landed as a new invention. One of the objections to the application of almost any powerful light to photographic art is the proneness to strong shadows, which can only be overcome by having a secondary light of less power than the primary, so arranged as to partially balance shadows cast by the primary. The same fault is present

in a more marked degree in the next system I purpose dealing with—viz., the electric light.

Illumination by electricity has been claiming a good deal of attention of late, causing at the same time somewhat unnecessary panic and confusion amongst all classes, photographers included. The praises bestowed on the new illuminant have been in the majority of cases trade quackery, and the insinuation that gas was to be superseded and obliterated for ever was simply a false representation made by company promoters to suit their own ends. Of all the systems of artificial lighting, I believe this, in its present condition, to be the most unsuitable for photographic purposes. The methods of production are too well known to all of you to need my taking up your time by descriptions. One system is now being tried in London with some success. I allude to the Van der Weyde; but whether it will stand the test of time remains to be seen. At present it is a novelty, and, as is usual in such cases, commands a certain amount of respect. This light is ordinarily utilised by its inventor for photographic purposes, to which he was the first to apply it. It is not, however, the production of the current, nor the means of converting into light, at which Mr. Van der Weyde has laboured, so much as the rendering of the light produced available as an illuminator, without wasting it, so to speak, and yet without throwing the rays directly upon the object to be illuminated. This he accomplishes by using the carbon rods as electrodes, placed vertically one over the other, the upper rod being $\frac{3}{8}$ -inch, and the lower $\frac{1}{4}$ -inch in diameter. These are placed near the mouth of a concave reflector; but none of the rays of light reach the spectator direct, as they are intersected by a disc of opal glass about 4 inches in diameter. The whole body of the light is gathered up in the reflector, and thrown out in a flood of pure white light. The current is produced by a Siemens's dynamo-electric machine giving continuous currents, and driven by a small Otto gas-engine. So far as I am aware, the Van der Weyde light has not yet been applied to purposes of general illumination.

The disadvantages of such a system are legion, and it is a mystery how any photographer could have the temerity to introduce such expensive apparatus into his studio. In the first place, motive power has to be supplied either in the form of gas or steam engine. The fumes from the former, and the vibrations of either, are most objectionable in the neighbourhood of a studio. A generating machine has next to be provided; and no matter what form be chosen, the cost is very heavy. A skilled mechanic would be needed to attend to the engine and machine, besides an electrical assistant to look after the lamp. The first outlay would be at least £200, and the sum required to meet the weekly cost would, I fear, be too large to allow of much margin for profit. Looking at it in this way, I do not think it at all probable that photography will benefit much from electricity, at least in its present condition. But, allowing that, by future invention and improvement, the cost of production and maintenance be lessened, there are other disadvantages to be overcome. The electric light is far from constant, either as regards luminosity or activity. I have now seen most of the methods in use, and they all flicker in a marked degree. The light is sometimes strong, and it suddenly becomes weak; at one time it is white, at another red; and, on more than one occasion, I have seen it, after changing from white to all the colours of the spectrum, resolve itself into darkness, and refuse to emit light at all. Variability in the composition of the carbon terminals accounts in a great measure for this; but, at present, all the aid that science can afford is not able to overcome these difficulties; and until the remedy is found, the electric light is useless as an aid to photography.

As regards the lime light, it can be dismissed in a few words, as I do not think it likely that we shall ever derive much benefit from its use. Its disadvantages, in a photographic sense, are almost as numerous as those connected with the electric light, and it has not anything like the power.

* Continued from p. 126.

I now come to the method which I believe to be the one of the future—viz., coal gas. The electric light scare, as it was called, although doing a great deal of harm, has not been unfruitful of good; it has taught us that all men are fallible, even American professors, and I hope it has shown Mr. (or rather, as he styles himself, Professor) Edison the folly of announcing to the world the success of an instrument before it was even invented, much less constructed. It has also put gas companies and gas engineers on their metal, and they have consequently shown that they can supply as powerful light as any electric system, provided the public care to pay for it. The rapid advance in the science of gas-lighting has been most marked during the past three months, and I firmly believe that it is gas and gas alone which will ultimately help us out of the difficulty into which we are plunged by the dark foggy days of winter. Gas as it is now burned in our houses lacks both power and activity in sufficient quantity to render it of use to the photographer, but it is in our power now to supply these defects, and from the results of some experiments now being conducted in Glasgow I believe that gas-light will soon be rendered both powerful and actinic enough to enable us to photograph by its aid. Amongst the various methods proposed for increasing the luminosity of the gas flame is that known as carburetted, which consists in adding to the gas before its combustion one or more of the hydro-carbons of which it has been deprived in the course of its purification, or which have been retained in the tarry products of coal distillation.

Here Dr. Drinkwater gave a description of the alcoh-carbon process and the carburetted process of Mr Macdougald, Dundee. These methods, he continued to say, although considerably increasing the luminosity of the gas at a small cost, are not to be compared with a new burner designed by Mr Sugg, the eminent London gas engineer. The burner is similar in construction to the Argand, only the gas is burned from a series of concentric rings, to each of which air is admitted. The light so produced is excessively brilliant, and under proper management is comparable with the Jablochhoff candle as at present used with the opal globe, which absorbs about 50 per cent. of the light. Here, then, in my belief, lies the future artificial illuminant of the photographer. What could be handier, what could be more cleanly? It would overcome one of the disadvantages of the luxograph which renders that instrument almost useless for children. The sudden flare up of the compound in the lantern would be certain to distract the attention of any child, if it did not frighten it altogether. By using the new burner we should have a steady, constant light, and with a little care one that would give good results, if not with wet plates, with any of the sensitive dry plates. In fact, for night work I think it probable that the dry plates will ultimately come into general use. From practical experience I know that they are extremely sensitive to ordinary gas light; how much more, then, would they be when that gas flame was rendered actinic by passing the rays through blue glass?

As regards the reflector to be used, I think the one at present attached to the luxograph could be greatly improved upon. I would construct it more of a parabolic form than spherical. As long as small flat mirrors are used, a true parabolic reflector cannot be made, and I therefore suggest a metallic mirror in one continuous piece, which would give all the above requirements.

Let me, before closing, sum up in a few words, the comparative disadvantages of the various systems to which I have alluded:—

1st. *Pyrotechnic Compounds*—(a) cost, (b) proneness to damp, (c) irritating fumes.

2nd. *Magnesium*—cost.

3rd. *Electricity*—(a) excessive cost, (b) difficulty of management, (c) want of uniformity in colour and intensity of light.

4th. *Luxograph*—loss of power by faulty construction of the reflector.

5th. *Gas*—at present I know of no disadvantage.

My task is finished, and if I have only succeeded in interesting you in the subject so that you may be persuaded to investigate and experiment for yourselves, I shall be satisfied. It is a subject of importance to us all, and I trust that my attempt to bring it before your notice this evening will be successful at least in eliciting the opinions of some of our members so that mutual benefit may accrue.

REMINISCENCES OF A PHOTOGRAPHIC VISIT TO GERMANY.

BY JOHN AMBLER.*

ON visiting a photographic establishment at Darmstadt one day, I was rather struck with the mode in which the prints were being washed. There was a wooden framework, about twelve feet by eight feet, on which was stretched, from end to end and from side to side, lengths of tape; the prints were laid on this network, and a copious supply of water showered upon them from a rose at the end of a length of india-rubber tubing. Of course this was done in the yard.

The village of Seeheim is one of those places you read about, but seldom see, consisting of a street proper and a few by-paths. From the castle there is a splendid view of the plain beyond. The ancient city of Worms is seen in the distance, and, as far as the eye can see, the Rhine winds its way along. Two miles or more from Seeheim is the Castle of Jüenheim, the residence of Prince Alexander, of Hesse, where H.R.H. the Duke of Edinburgh became engaged to the Grand Duchess Marie. I must say they chose a very charming spot for the delicate business, as the place abounds with lovely walks, and the air is perfumed with the sweet odour from the vineyards in the valley beneath. The inhabitants of the village of Seeheim were very polite. Each villager we met would greet us with a "Guten morgen!"—the men and boys raising their caps, and the females making a graceful curtsy. This got to be rather a nuisance, as I wore a Scotch cap, and it was not so convenient to be taking it off every few yards, especially if a dozen geese were endeavouring to bite your legs as you passed by. The people of note in the place appeared to be the pastor, schoolmaster, shoemaker, hotel keeper, and—I must not forget him—the antiquated joiner, whom we visited once or twice; but I cannot congratulate him on his sharpness, as we generally did the work, and paid him for the use of the tools. I could say much more about this village, but it would be hardly within the scope of this paper. I could mention the Lutheran church, where Princess Alice and family had their private pews, and where the female portion of the congregation sit downstairs and the males in the gallery.

After finishing our business at Seeheim, our next journey was to Potsdam and Berlin—a distance of about five hundred miles. The ancient town of Frankfort-on-the-Maine was our first stopping-place. The streets had a very busy appearance, it being the autumn fair. In shops which only occupied a few square yards of space, they seemed to be doing a splendid business. We had a hasty look round this important town—"the cradle of the Rothschild family." In some of the streets the top stories of the houses on each side were so close together that you could easily shake hands with your opposite neighbour through your bedroom window! The great drawback to the town is the abominable stench which annoys you in many streets, as the drains flow along the streets uncovered. At the station a careless porter smashed one of our boxes, but nothing inside was broken—thanks to the felt packing.

* Continued from page 111.

After a sleepless ride we arrived at Potsdam about eight o'clock the next morning. We made our way to the palace of the Crown Prince, three miles from the station. Built of brick, with stone facings, the exterior of this royal residence has not a very imposing appearance, although of great dimensions; but the interior is most lavishly decorated. It was built by Frederick the Great, and so enormous was the expense, we were told, that he burnt the accounts, as he was afraid to look at them. The dome ceilings in many of the rooms are gilt-gold and silver, and the furniture likewise. There is a theatre in the palace decorated in a like costly manner. The walls and pillars of the banquetting-room are inlaid with rare stones and shells. We sat down to an excellent dinner in one of these beautiful rooms every day we were there. I well remember our first day there. I was about to enter the room where dinner was laid for Mr. McLachlan and myself, but the soldier on guard would not permit me to go in, charging his bayonet at me. I failed in my attempt to explain matters to him, so I brought her highness's valet to get me out of the difficulty.

We made the Hotel d'Angleterre at Berlin our headquarters. This hotel is close to the river which flows through Berlin, so that we can safely say we were "on the Spree" every night. Opposite was the Emperor's palace, and to the left the immense Free Museum, which takes the visitor a couple of days to see properly.

We went to Potsdam—a distance of twenty-three miles—almost daily for a month. By the kind permission of the Princess Royal we erected a wooden framework against the front of the palace (which, by the way, is a lofty building, and had the beneficial effect of subduing the top light). This framework was covered with cloths, forming a miniature studio, only it had to be taken down every night. The Crown Princess also offered us the use of a summer-house in her private garden for the purpose of a dark room, and into which Her Royal Highness and children would sometimes come to see the development of the negatives.

Although we were there a month you must not suppose we were photographing every day, for the time of Royalty was so filled up with Court appointments that sometimes we would have to wait a week or two before a sitting could be obtained. Singularly, it often happened that just at the time appointed it would commence to rain (this being the rainy month in Prussia), and then a tremendous gust of wind would come and blow the "studio" away! However, a sitting was obtained, Her Royal Highness being in evening dress, according to the design. Although we took four negatives at this sitting, none of them had the desired expression. Her Royal Highness then said that she and the Crown Prince would be receiving the King of Italy at palace in Berlin in a few days; after the reception she would be able to give a sitting. We accordingly took the apparatus to Berlin.

These photographs turned out unsuitable for the purpose of the group, the lighting at the Berlin palace being bad for portraiture. We could not tell how long it would be ere another sitting was obtained. Her Royal Highness was getting rather weary, so she asked Mr. McLachlan to search her album and find some photograph of herself which might do. As this was the last portrait required to complete the group, a satisfactory likeness must be obtained, or else it would mar the effect of the group, in which the portraits are so life-like. The Princess Royal, however, graciously granted another sitting at Potsdam palace, this being about the twentieth portrait taken; and, fortunately, it had just the very expression that was desired. Her Royal Highness was quite amused at Mr. McLachlan's determination, and told him that she had never seen such a determined man in her life; he reminded her of Robert Bruce and the spider.

Having already made this paper longer than I intended, I must close; but, before doing so, with your permission

I will show you a sketch of a useful lamp for the dark room which we saw at the premises of Messrs. Reichard and Lindner, photographers, Berlin. It is lighted with gas, the burner being a cylindrical one made of pot, but any burner will do. The square tin framework contains in two of its sides deep orange glass, on the third side a lighter yellow, and on the fourth side white frosted glass. The bottom and the top of the lamp are uncovered. When you develop the negative you have the two deep orange sides towards you, and when you want to examine for density you give the lamp a turn and bring the white frosted side towards you. The advantage is that you always have the same light by which to judge of the intensity of your negative. The backgrounds at this establishment are made of two widths of buff paper stretched horizontally on canvas.

They retouch their negatives, giving them, whilst damp, a coating of a solution of gum (one ounce of gum to ten ounces of water), and let them dry gradually. I don't think they varnish after. Of course by this method of preparing the negative for retouching you have an even "tooth;" but you must also have a fine touch, or you will easily scratch the film away.

I shall ever remember Herr Reichard, of this firm, for his kindness in showing us the sights of Berlin, not forgetting a visit to the spacious restaurant under the large Town Hall, where are daily sold eight thousand glasses of lager beer—a drink similar to our weak table beer.

When we had at last obtained the precious Royal negatives Herr Reichard bade us "Good bye!" at the Potsdam station at ten o'clock one night, as we were about to depart for England; but, before saying "Adieu!" I cannot forget the loving kiss and embrace which he gave, this being the custom among the men of Germany.

The next night, at eight o'clock, we were leaving Ostend in the mail steamer for Dover. It was a rough sail, which made me excessively ill during the seven hours it took to cross the Channel. Passing through London, Manchester was reached shortly after noon, and, not having had "forty winks" since leaving Berlin, I was thankful to get home.

PHOTOGRAPHY ON WOOD.

BY PROFESSOR J. HUSNICK.

I adopted the method of exposing gelatinized paper alone under a negative, and when the chromium salt had been washed out, placing it on a plate of glass and laying on the ink with a very small glue roller. With this I succeeded completely; I obtained beautiful pictures, perfect in the half tones, which could be at once laid on the wood block, and be printed off at one impression. Gelatine paper can be easily prepared, and kept in stock, according to the process described in my book *Das Gesamtgebiet des Lichtdrucks*, by placing sheets of paper in a perfectly horizontal position, and coating them with a dilute solution of gelatine, and they need only be sensitized at the moment of use with a one per cent. solution of chromate; by this means the above described method is rendered thoroughly simple and practical, as well as being certain in its results. The wood block itself requires a very simple preparation; it must be rubbed down with whiting to which some adhesive substance has been added. This rubbing can be best effected by the ball of the hand. Gelatine paper can also be purchased from the dealers, and even my own photo-lithographic transfer paper will answer the purpose very well, provided that, before immersing it in the chromate solution, it be wiped over a few times with a damp sponge, and then rinsed well in clean water. This is done to remove any soluble matter from the surface. Afterwards the paper is dipped for some minutes in a one per cent. solution of chromate, then drained, and hung up to dry at an ordinary temperature. Sensitized in this way it remains good for the above named purpose for from three to five days.—*Scientific American*.

The Photographic News.

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PORTRAITS BY ARTIFICIAL LIGHT.

A GOOD many photographers will sympathize with the remarks of our recent correspondent, Mr. Vincent Hatch,* when he expresses his conviction that photographers have already enough to contend with in their daily struggles, without introducing night business as a recognized element of the portraitist's business. But it should not be overlooked, on the other hand, that in many cases the daily struggles would be materially reduced by anything which increased the chance of income or adding to the facility for executing business. During a very large proportion of the time usually devoted in this country to achieving the day's work there is really no daylight in the photographer's estimate of that rare blessing. Hence, if artificial light can be made available, it can only be regarded as an unqualified boon. The photographer whose business and income, gained in the ordinary hours of daylight, are sufficient, will not need to trouble himself about artificial light, whilst insufficiently employed professional photographers and many amateurs will gladly avail themselves of the best facilities artificial light can offer them. We see no reason to fear that it will impose extended hours of labour on operators, who, if employed at all in night work, would, of course, be paid "over hours," and probably, as in most other crafts, at an increased rate of remuneration.

Be this as it may, there can be no doubt that the question of the best artificial light for portraiture is, at the present, interesting photographers in an unusual degree.

The electric light after the manner of Vanderweyde, and the system of Messrs. Alder and Clarke, have been tolerably fully described to photographers, and we need not, in noticing other methods, be supposed to enter into comparison with these patented methods. The plan suggested by the Rev. H. J. Palmer, and described in our pages a few weeks ago, is especially worthy of the attention of amateurs for the simplicity and efficiency of the mechanical contrivances. Mr. Harman, of Bromley, recently read an interesting paper before the South London Society on his experiences with some very similar appliances, and since the meeting we have had opportunity of personally inspecting the simple and ingenious contrivance. A square box, from thirty inches to three feet square, divided diagonally, gives a triangular chamber or recess, the two insides of which, lined with white paper, form reflectors collecting the rays of light, and throwing them on to a model placed a few feet distant. In this triangular chamber a very active pyrotechnic fire is burnt, and its

glare and intensity are subdued and diffused by placing in front, forming the hypothenuse of the triangle, a sheet of tissue paper. Nothing could be simpler or more easily contrived, and, judging by results, it is exceedingly efficient. The pyrotechnic compound which Mr. Harman employs is, he finds, brighter and more actinic than the Bengal signal fire commonly used. He has been good enough to let us have the formula for the benefit of our readers. It consists of—

Nitrate of potash...	...	1½ pound
Flowers of sulphur .....	...	½ "
Sulphide of antimony .....	...	1 ounce
Finely powdered charcoal .....	...	½ "

An ounce of this is placed in the middle of some sand held in a metal dish, and fired by a taper put through a hole in the back of the chamber. In the top of the chamber is a hole, placed over which is an inverted flower pot, about six or eight inches in depth and diameter. From this a piece of pipe, or something of the kind improvised, may be made to carry off fumes into the open air. The ounce of the compound fired burns for about ten seconds, and gives a well-exposed negative at the cost of a halfpenny. Nothing could be well cheaper.

Mr. Harman boldly encountered two classes of difficulty at the same time. He was making his early experiments with the new rapid dry plates, and continued these in conjunction with the experiments in working with artificial light. Hence he was not perfectly satisfied with the negatives he exhibited at the South London meeting, which he described as "extremely bad." They were not that. They had the defects common in first attempts with gelatine: they were a little flat, chiefly from over-exposure. But the quality of lighting was very good. In order to get detail in the shadowed side of the face, Mr. Harman does not find a side screen reflector quite satisfactory, but finds it best to burn a piece of magnesium ribbon for a few seconds of the exposure, so as to give light to the shadowed side. The result is very satisfactory.

In very dull daylight, especially late in the day, a very few seconds of a good artificial light will be found to light up the head, giving pluck and brilliancy to the negative, which would otherwise be entirely wanting. This is a hint which the portraitist may find worth applying in cases of an imperatively desired portrait from a sitter who "cannot call again."

AN UNTRUSTWORTHY OPERATOR.

No one will, of course, attribute to a community the shortcomings of an individual, but all operators are concerned in discovering, if possible, and certainly disowning, the specimen described in the following letter from an old and esteemed correspondent. He says:—

"Two or three numbers back you inserted a humorous letter touching a correspondent's experience of 'operators.' Allow me to supplement his experience by some account of my own.

"I have been resident in the place I now date from nearly twenty-two years, and have had occasion to employ quite twenty assistants at various times. All (save one) turned out either *ungrateful* or *dishonest*; but my last experience, this very week, caps all.

"I employed a gentlemanly-looking person, evidently well up to his work, to photograph a school seven miles away. I trusted him with my wheeled dark chamber and a valuable lens. He did his work well, and sent me the negatives, which I printed from, and despatched, mounted, in a prepaid parcel; but one fortnight has elapsed, and I have never since seen my trap, my leus, or my money.

"My lawyer informs me I can prosecute for breach of trust only when I catch my trusted operator, who has, doubtless, a different name for every place he honours with a visit."

* These remarks were written before we had received the letter of "Operator" printed on another page; but they bear upon his letter as well as that of Mr. Hatch.—Ed.

FOG, OVER-EXPOSURE, AND REVERSAL OF IMAGE.

BY C. BENNETT.

I HAVE been waiting for a little bright weather and for my spring plate-coating to experiment with a few rejected gelatine films. On the above subjects, any plates that may have accidentally been scratched or otherwise injured find thus an excellent opportunity to perform a service, and the result gained may interest some of your readers.

The difficulty of discerning from what cause a certain veil on a negative may arise is frequently great to those who only occasionally make use of these films, and also to those who, although often using them, have not personally made the emulsion or performed the whole of the operations.

I must be excused if I touch as a preliminary upon some parts of the subject that have already been canvassed, so that I may arrive, if possible, at a point still further. A negative, perhaps, is shown, having a certain amount of veil over it. What is the cause? Fog, or over-exposure? If from the former, it will arise from too much silver or too much light in working; if from too much silver, the veil is almost always uneven, and of a blue-black tint, and assumes more of a stain than anything else, differing greatly in that respect from the veil caused by light, which, although slight, or in whatever degree of intensity it may be, will still be of the same brown tone that a gelatine negative always is when developed with an alkali; so these two causes of fog may be identified with a considerable amount of certainty.

It may be assumed that it will not be difficult to detect whether, supposing the veil to be that of the brown tint, the fault is too much light, either connected with the exposure or with the other operations. If with the former, the negative will be excessively full of detail; and with the latter, if the exposure has been right, the detail will be obliterated, more or less.

It is obvious that gelatine films are more liable to these two faults than any other process, on account of their sensitiveness. Primarily, we have the difficulty of using a sufficiently moderate light to work by; and secondly, being used to other processes, we are apt not to realize the meagre exposures necessary.

There comes, then, the question of the effect of excessive action of light, whether in a small degree or in a larger, and it is to that end I have been using up a few plates.

We have indications in the other processes of reversal of image: the mere fact of a wet-bath plate being over-dense when not sufficiently exposed, and upon a further exposure being given the toning down of the high-lights showing the inclination to reversal; and I may not be wrong in saying that a bromized collodion dry plate film will show it even more readily, especially so from several remarks on the subject lately appearing in the weekly photographic magazines; and, again, to a greater degree do gelatine films exhibit that tendency, and yet hardly a tendency, because they do so out of absolutely necessity, the reversal being much more rapid and complete than with the others before named.

I have endeavoured to put my experiments in a visible form, as you will observe from the plates I enclose (the plates were put in a pressure frame and exposed, a card being drawn along at stated intervals).

On plate 1 there were five exposures.

A	1	second	weak	diffused	light
B	2	"	"	"	"
C	3	"	"	"	"
D	4	"	"	"	"
E	5	"	"	"	"

RESULT:

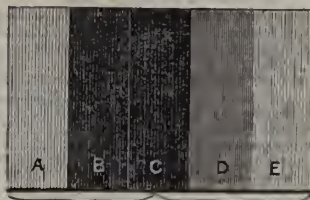
The negative gained density from A to B. Say B and C are the densest points, and equal to an under-

exposed sky. At D it is less dense, and at E it has toned down considerably, and equal to a sky in a fully-exposed harmonious negative. Plate 1, therefore, shows the loss in density after a given time.

PLATE 1.

Exposure.

1 2 3 4 5 seconds.

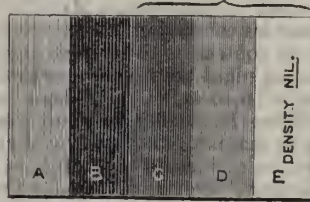


Increase in density. Decrease in density.

Plate 2 shows a result more advanced. B and C are still dense strips; but D has had a much longer exposure, and has toned down more than E in plate 1, and letter E on this plate has received a still longer exposure, and has toned down till its density is completely lost.

PLATE 2.

Exposure more prolonged.

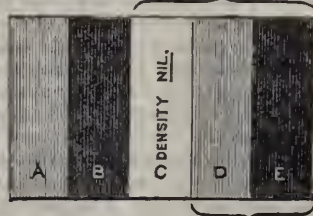


Great loss in density.

Plate 3 exhibits a result still further advanced, the film having received at each letter after B a much longer exposure. B is the densest, but to letter C I have given a longer exposure than to E in plate 2, and it is almost colourless, and, in fact, when fixed would be bare glass, the developer not having influenced it, although B, which had only a tenth of its exposure, is quite dense.

PLATE 3.

Exposure much more prolonged.



Increasing in density in the second or positive reduction.

Now from this point C commences the reversal of the image—otherwise a positive—an equivalent to a transparency taken direct in the camera, because, as will be seen at the next draw of the card, viz., at letter D, the developer has brought out an image perfectly distinct; and, again, at the next draw—or, rather, a still longer exposure, viz., at E—the image comes up almost as dense as B, which is the densest point, the bare glass strip, viz., C, lying between the two.

These plates are not fixed, as they show best without—that is, viewed superficially; but were they fixed the strip C would represent positively bare glass, the midway point between the negative and positive reduction.

I also enclose a plate exposed in the camera, the shutter of the dark slide having been closed half-way after the negative image has been formed, to allow the positive to be formed, so that I get on one half of the plate the negative of the subject, and on the other half the transparency. It is so timed as just to show the negative over-exposed and fading away into the positive, which, on the other half, is faintly formed, and between which exposures there has been the bare glass stage spoken of at letter C, plate 3.

A delicate, lightly salted emulsion, containing, perhaps, ten grains of silver nitrate, appears to take the reversal far quicker than one of the heavily salted coarse and granular class; and especially where the silver is close upon its equivalent does this aptitude present itself.

If these remarks will assist gelatine workers to estimate preliminary stages of fog and over-exposure, I shall be glad, and especially if it should induce a discussion as to the chemical changes that take place, which I leave in other hands.

Although the negatives are not fixed, they will bear examination in ordinary diffused daylight.

NOTES ON BENNETT'S GELATINE EMULSION PROCESS.

BY W. WAINWRIGHT, JUN.*

IN January, 1878, a writer in the "Photographic Almanac" said of gelatine, "that it is equal in value to collodion, we think may be fairly predicated; that it is superior, is not yet evident." The same writer goes on to say with collodion "one may digest with excess of silver nitrate for days, and, with due knowledge of the treatment necessary at the after stages, may arrive at a pitch of sensitiveness which is scarcely attainable with gelatine without detriment to other necessary qualities."

Since the article referred to was written, a revolution has taken place with regard to gelatine. Instead of being equal in value to collodion, it is far superior to it in point of sensitiveness, cleanliness of working, exquisite detail, and quickness in developing. This change is owing to the free publication to the public by Mr. Bennett of the proper method of working gelatine—a result at which he arrived after much careful experiment. I do not claim for the negatives and prints I send round to-night that they are the best or the quickest that gelatine can produce. I show them as an amateur, and as examples of what any one may do by following strictly Mr. Bennett's formula.

There are many formulae of various processes published, but it is a question how many of them are workable by ordinary photographers.

As soon as Mr. Bennett had published his formula (and even before, as the process had been shown to many) the market was supplied with gelatine plates by various makers who had never before produced anything like them in rapidity or quality, nor can they now, except they follow his process.

Only the other day it was a matter of speculation whether gelatine plates could be used in the studio. Now many are using them to the entire exclusion of wet plates.

The process claims for itself, I think, the following special peculiarities, the combination of all of which leads to success:

- 1st. Lengthened emulsification.
 - 2nd. Thorough washing, so that all the salts are eliminated.
 - 3rd. The power of using a strong alkaline developer without any restraining bromide.
 - 4th. The working in an extra non-actinic light.
- The negatives I exhibit are all taken with a rapid rectilinear lens in sunlight. The exposure in April on trees is

15 seconds, and on all the others 7 to 10 seconds, with the exception of one which is nearly instantaneous. I have not myself gone in for very extra rapidity, which would entail emulsifying for from three to five days, but have contented myself for ordinary landscape work with an emulsification of 2½ days, and thorough washing, say 12 hours.

There is little doubt in my mind that owing to the liberality of Mr. Bennett a great impetus has been given to gelatine plates, and the trade and public will much benefit thereby. The formula I use is what Mr. Bennett has already published:

7 grains bromide ammonia
11 do silver.
90 do. gelatine

I send round the prints and negatives together, so that members may be able to compare them together, and they will then see how vigorous and soft a print can be obtained from a comparatively weak negative.

PHOTOGRAPHY IN COLOURS.

BY M. K. VERSNAEYEN.

MANY people, latterly, have erroneously given to different systems of painting on photography the misplaced title "photography in colours." This was too much to say of the ingenious results, some of which were obtained by the transparency of the photographic image, some by other means. Nay, attempts were even made to make us believe that photographic proofs tinted by oil or water-colours were proofs obtained directly in colours. The only process which, up to the present time, has really deserved the name of "photography in colours" is that of M. Ducos du Hauron, but it is only still in infancy, its practice being very difficult, and the colours obtained not always being of the required tone. To arrive at the real colours of nature is no easy task, but we doubt not that M. Ducos du Hauron will, sooner or later, solve this difficult problem.

M. Germeil Bonnaud's process of photographing in colours—we use this term intentionally, because it is the only term strictly applicable—simply consists in causing the photographic action to operate directly on the colour. To this end M. Germeil Bonnaud has carefully sought the means of rendering a neutral colour sensitive, and at the same time insoluble, so that it might be able to resist the numerous baths necessary to the photographic process. When this process is used, all the operations remain the same as in the ordinary method, with this great advantage, that the impressions made by the silver salts on the coloured background give precisely the effect of the original model, and have not that hardness of tone that generally characterises a "retouched" photograph. The print comes out of the bath completely coloured. Thanks to the chemical agents and the sensitive paper used by M. Germeil Bonnaud, the colours and the photograph are henceforward indelibly united. But, in addition to the great artistic results, the material advantages of this discovery are very considerable. Firstly, the true harmony of colour is restored, whilst prints coloured by any of the old processes—photo-painting, as one might call them—are always monotonous and wanting in durability. By oil painting on the photograph, the employment of water-colours, or even of transparent media, the cost of production was immensely increased. And this was not all, because to obtain really artistic effects it was necessary to employ artists of such a degree of talent as is rarely found in country towns, where one does not find every day a Millais, a Dickinson, or a Nadar. Now the photographer can do it all himself. So much the better for those who are neither painters nor draughtsmen. It appears that the cost of the coloured photographs produced by the Germeil Bonnaud process is very little, if anything, more than the ordinary uncoloured ones. So we get at the price of an ordinary carte-de-visite a photograph in unchangeable and unfading colours.

* Read before the Photographic Society of Great Britain.

PHOTO-TYPOGRAPHY.

BY CAPT. J. WATERHOUSE, B.SC.*

Photo-Blocks in Half-Tone.—Many attempts have been made from time to time to obtain surface blocks from photographs from nature and other shaded subjects, but with imperfect success. If this object could be successfully attained, it is easy to understand that it would be of immense value for book and newspaper illustration and many other purposes. There are, unfortunately, two grave difficulties to be overcome—one caused by the fact that to produce a successful printing block the surface of all the lines or dots which receive the ink must be very nearly on one uniform level, and therefore the moulding processes already described are inapplicable. The second and greater difficulty is to obtain a suitable grain to break up the continuous gradation of shade in the photograph.

M. Rodriguez, of Lisbon, has proposed an ingenious method by which promising results have been obtained. He makes a paste of sugar of milk, or some other substance in powder soluble in nitric acid, with a little oil of lavender and bitumen, and adds a sufficient quantity of it to a solution of bitumen in turpentine. The metal plate is thinly coated with this in the ordinary way, exposed to light, and developed with turpentine. The plate is then plunged into a bath of dilute nitric acid, which gradually penetrates the resinous coating, and dissolves the substance used for forming the grain, breaking up the preparation more or less according to the thickness of the bitumen, and thus reproduces the half-tints of the originals.

In many processes of collotype the gelatine film presents a very marked grain, which may be coarse or fine according to the composition employed. It is probable—though I have not tried it, nor, so far as I can recollect, seen it proposed—that blocks showing very fair half-tone could be obtained by taking a print from such a plate with a grain, transferring it to zinc, and then biting it in by a method similar to Gillot's already described. Very great care would have to be taken in the successive etchings to preserve the uniformity of surface and protect the finest tints from being bitten too much.

The prints in half-tone obtained by Mr. Dallas' process, known as "Dallastint," appear to have been produced by some such method. This, however, is only a conjecture on my part, because no details of the process have been published.

M. Rousselon has, I believe, obtained fair results by similar transfers from his engraved plates, and it is probable also that a transfer to zinc from one of the plates, prepared by the modification proposed by myself of Geynet's photo-engraving process, bitten-in in the same way, might also answer the purpose, though the grain is perhaps scarcely strong enough.

Details of several of the methods of photo-typography will be found in Motteroz's "*Essai sur les Gravures Chimiques en Relief*," and Scherer's "*Lehrbuch der Chemigraphie*."

Correspondence.

PHOTOGRAPHY BY ARTIFICIAL LIGHT.

SIR,—I sincerely hope there are few photographers who are willing to adopt Mr. R. V. Harman's suggestion (in his paper read before the South London Photographic Society at their last meeting) relative to night-work in photography. There is no better advice than that contained in the old adage, "Make hay while the sun shines" (if I am not perpetrating too old a parody I would say, "Make photographs, &c.") That we get too little sunshine (especially during the winter seasons) by which to make

a sufficiency of photographs, to make photography a *perfect* success financially, I am sorry must be admitted.

If artificial lighting is introduced successfully into the studio, let it be to take the place of the sun when it should, but does not, shine, and not turn night into day. I would ask, Will the introduction of portraiture at night materially increase the business of a photographer? I think not.

With regard to Mr. Harman's city gent. who has a birthday in the family on the morrow, we will leave him with Mr. H. and our suburban brethren who know him best, just doubting if immediately after a good dinner and the usual wine is the best time to photograph gentlemen. At such time their good humour does not confine itself to facial expression, but is liable to break out in some witticism expressed in the middle of the exposure, when the joke, if ever so good, would be quite lost upon the operator. The British workman, we all know, is a very different subject, and I am afraid to think at what hour he would choose to have his portrait "took," provided the profession indulge him "after dark." Just fancy him ringing your bell about midnight, accompanied by several of his companions, for a group after leaving their favourite "pub." (where they generally manage to stay as long as the law will allow). I "guess" it would require an extra powerful light and a particularly *rapid* plate to get anything like a steady result. I am quite certain that all British workmen who wish to have their photographs taken, or who are worth photographing, will find time to have it done earlier in their dinner-hour, or on Saturday, when most of them have the after-part of the day at their own disposal. We have only to introduce night work into photography, and numbers will take advantage of the opportunity by being photographed as Mr. H. suggests; but if they cannot get what they want at night, depend upon it they will make time to be photographed during the day.

One thing to be feared is that some enterprising men will introduce portraiture by night, and compel others in the same district to do the same in self-defence, just as prices have been cut down in some places.

Let assistants look well to it, and oppose extra working hours all they can, and not have night turned into day by the introduction of artificial lighting. I do not wish to imply that assistants are overworked—indeed, I doubt if many have had sufficient to do to fill up their time for the last few months, and often, when there has been work to do, the light would not permit of its being done properly; then artificial light would be a boon. Night work as a regular thing should be opposed by all who respect their health or profession.—Yours, &c., OPERATOR.

P.S.—Mr. Harman in his paper gives a very lucid description of the apparatus he used to produce his pictures by artificial light: will he kindly publish the formula for the light he uses, as doubtless others besides myself will be glad to try it?

REVERSED NEGATIVES.

DEAR SIR,—I believe I may fairly claim to have been the first to suggest the method of reversing the collodion coated glass plate in the dark slide, with a view to the production of reversed negatives. This was as far back as 1862, when I was experimenting with my copper-plate process.

In 1863 I suggested the method to Mr. Francis Bedford, to enable him to take for me the view of Kenilworth Banqueting Hall, of which I subsequently engraved a plate by my process, and prints from which plate were presented by you to your subscribers on the 1st of January, 1864.

The method has only two disadvantages—arising, firstly, from the difficulty of obtaining glass free from bubbles and spots; and secondly, from the need of drying and polishing the bare side of the glass after removal from the bath—cloudy smears and drops of bath solution

* Continued from page 112.

being more fatal on that side than even hubbles in the glass, which are generally small, and may not come into an important part of the picture. However, with care in selecting the glass, wiping and drying the bare side, excellent reversed negatives can be obtained.

My object in now referring to the subject is to point out that as dry plates will soon supplant the bath process, the chief difficulty in obtaining reversed negatives by the above simple method is removed, and attention has to be given only to the use of good glass—it being easy to clean the bare side before exposure.

I must say I have always been surprised at the penny-wisdom which leads even some good photographers to use inferior glass for valuable negatives. I hold that if a negative was worth taking and keeping, it should be on patent plate. Especially is this now important, when I believe photo-mechanical processes in permanent printing inks will supersede at no distant date (except for very large work in small numbers) both silver and carbogelatine printing.—Yours truly, DUNCAN C. DALLAS.

362, Gray's Inn Road, March 15th.

CLEAN PLATES.

DEAR SIR,—The omission of a word in my little article on "Clean Plates" in your last impression has made all the difference. The beginning of the fourth paragraph should be "I may, perhaps, mention that I never use a substratum *except* for dry plates, &c."

Your answer to G. Taylor in the same number has reminded me of a circumstance which occurred a few days since that may serve as a caution to some of your readers.

I found, after varnishing a 12 by 10 negative, that it was rather too dense for the purpose required, so I decided to remove the varnish and reduce the intensity. I proceeded as usual to lay the negative in a dish, and covered it with methylated alcohol, opening a fresh gallon jar for the purpose. All went well for a minute or two, but on lifting up the negative to ascertain if the varnish was removed, I found it was, *and the picture with it*. The reason, of course, was that the methylated alcohol was stronger than that used for the collodion.

Luckily, the object photographed was still in my possession; the damage, therefore, was in my case easily repaired by taking another picture.

In future, however, when I have anything of the kind to do, I shall, if possible, try the effect on a worthless negative taken with the same sample of collodion as the one from which I wish to remove the varnish.—Yours truly,

F. A. BRIDGE.

Norfolk Road, Dalston, March 1st.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

The usual monthly meeting was held in the Water Colour Gallery, Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a former meeting were read and confirmed, and the following gentlemen duly balloted for and elected:—Messrs. G. L. Addenbrooke, A. Cowan, W. H. Wheeler, and Captain G. S. Clarke, R.E.,

CAPTAIN ABNEY, F.R.S., then read a paper on "Coloured Glass Suitable for the Developing Room, and on the Employment of Sulphate of Quinine as a Substitute."

The discussion on this paper was postponed.

Mr. C. BENNETT read a paper on the "Gelatin Emulsion Process" (see p. 133).

Mr. W. WAINWRIGHT, Jun., exhibited some negatives produced by Mr. Bennett's process, and read a note on the subject (see page 140).

A number of prints from gelatin negatives were shown by Mr. Cobb, and by Mr. Hemery a print from a gelatin negative taken in four seconds.

Mr. BERKELEY exhibited a failure he had met with in plates which had been prepared with excess of silver and gelatin washed, and after keeping for a few weeks, had turned red previous to development. The plate shown had been kept in a plate box, and he did not think any free silver was present, as the washing waters showed none on testing.

CAPTAIN ABNEY said that free silver combined with gelatin and formed a definite compound. This compound could not be got rid of by washing.

Mr. BERKELEY, replying to Colonel Wortley, said he used Nelson's opaque gelatin; the usual kind sold at 6d. a packet.

Colonel WORTLEY found it impossible to use opaque gelatin. Nelson's No. 1 was the best.

Mr. BENNETT remarked that opaque gelatin gave the red fog complained of by Mr. Berkeley.

Mr. SEBASTIAN DAVIS asked Mr. Bennett what was the effect produced by allowing the emulsion to remain a long time at a high temperature.

Mr. BENNETT said the emulsion became creamy up to about twelve hours' keeping; after that, although it rapidly became quicker, it did not show any more creaminess, because as much of the silver had been taken up as was possible. There was, he thought, an organic decomposition set up as well as the decomposition of salts.

Mr. BENNETT, in answer to a question, said he had already stated he preferred Nelson's No. 1 gelatin. With reference to the fogged plate just exhibited, he might say that there were very few samples of opaque gelatin which would not show a red fog. He presumed that the higher temperature at which the opaque gelatin was cleared had something to do with it. He did not find opaque gelatin, when emulsified for several days, answer at all.

Mr. MAWDSLEY had worked Mr. Bennett's process for some time, and could confirm all that had been said in its favour. He had been a maker of dry plates for many years, but had never found anything until the publication of Mr. Bennett's method which combined so much sensitiveness with, at the same time, such good quality.

Mr. COBB had used gelatin plates commercially for nearly four months, to the entire exclusion of the nitrate bath, and could fully endorse what had been said of their rapidity and quality.

Capt. ABNEY observed that he did not like to see old friends thrown overboard, and he must confess he had seen nothing in the specimens of gelatin work exhibited that night which could not have been produced by collodion. In the paper he read before the Society last meeting, he stated his views on the gelatin process, and undoubtedly it was an admirable process, but there was still much to be desired so far as control of development was concerned. With respect to their sensitiveness, it might be interesting to inquire as to what the increase in this direction was due. In the winter light, as any one who studied the actinometer knew, there was a great absence of blue rays, and it was these blue rays on which the sensitiveness of the wet process depended; but of course, if they were not present, they could not be used. Now with the gelatin plates the yellow rays were of actinic use, and hence the value of these plates in winter; but when the summer came, he did not think there would be that remarkable difference between the two processes which some anticipated. So far as the introduction of dry plates into studio work was concerned, he believed that Col. Wortley five or six years ago made a practice of taking large portraits with collodion-emulsion. Collodion had been a very good friend to the photographer, and he (Capt. Abney) did not like to see it hurriedly cast aside for a new love. The photographer knew what collodion was made of—or at least he ought to do so—but he could not be so sure about gelatin. It was almost impossible to get two samples of the latter alike, and it was necessary to modify the manipulation accordingly. He need only refer to the experiments made by Dr. Eder to show what an enormous number of varieties of gelatin there were, and his own experience was that you could not get two samples to produce exactly the same results. Now with collodion it was an easy matter to know all about it, and a picture could be so modified in the development as practically to produce any results wished for. He confessed he had not been able to do this with gelatin, and would be glad to have a lesson from anyone who knew how.

Mr. BENNETT: It is one of the faults of the collodion process that it has to be treated locally. Now, with gelatin you do not it is perfect in itself.

Captain ABNEY: Mr. Bennett's process is undoubtedly very perfect, but it leaves nothing to the artist in regard to modifications of development.

Mr. FRANCIS BEDFORD felt the force of Captain Abney's remarks in regard to the greater control of development in the collodion process. It was quite possible by judicious development to get an artistic effect in the negative which did not exist in the object. An atmosphere could be given, and he had seen by this means a ray of light brought against the figure which was not in the original. It was also a great advantage to be able to work in comparative light, and be able to see what one was doing. He would suggest that it would be advisable to work the two processes side by side rather than for the exponents of one process to discourage those of the other.

Colonel WORTLEY thought the meeting ought not to wander into a discussion as to which was the best process. It was certainly due to Mr. Bennett to say that his process was as far in advance of any process hitherto published as a Great Northern express engine was in advance of Stephenson's Rocket. He (Colonel Wortley) had done good work with collodion bromide, but, so far as gelatine was concerned, Mr. Bennett's process was greatly superior to any other. Mr. Burgess used to send out very good gelatine plates, and no one produced any better ones until Mr. Bennett came forward. It was only due to Mr. Bennett to say this.

The President suggested that the discussion be adjourned until the next meeting, which he begged to remind the members would take place on the first, and not the second Tuesday in April. In alluding to Mr. Bennett, the President referred to his liberality in giving his process openly to the world, instead of keeping it to himself, as he might easily have done, and in all probability realised handsomely by it.

After votes of thanks to Captain Abney, Mr. Bennett, and Mr. Wainwright for their papers, the discussion was adjourned.

Mr. YORK exhibited an instantaneous shutter band on Mr. Cadett's principle. The feature of the shutter was that it opened inside the camera at the back of the lens, and thus did away with any risk of startling a child, which those in front of the lens were apt to do. Mr. York observed that the objections to shutters inside the camera was that they raised dust, but his answer to that was that there should be no dust to raise.

A specimen of enamelling by a new method sent by Mr. David Gay, of Hanley, was handed round. After which,

Mr. HOWARD GRUBB exhibited two stereoscopes of a novel construction. The first was intended for transparencies, and consisted of two lenses and two prisms so arranged as to bring the right eye only on the right-hand picture, and the left eye on the left-hand picture. The arrangement of the lenses and prisms also superimposed one picture on the other, and thus a perfect stereoscopic effect was produced, much more pleasant to the eye, and with less fatigue to the viewer than in the ordinary method. The second stereoscope was intended to exhibit pictures of a larger size. Mr. Grubb mentioned that he had lately shown a book written by a monk, and published at Antwerp in 1513, in which the whole principle of binocular vision was laid down and illustrated by diagrams.

After some conversation on an illustration of the tenacity with which gelatine stuck to glass, shown by Mr. Sawyer,

The President called attention to the fact that March 31st was the last day for sending in competitions for the Paget prize, and announced that the Presentation Prints, which could be had mounted or unmounted as the members desired, were in the room ready for distributing.

The meeting then adjourned.

EDINBURGH PHOTOGRAPHIC SOCIETY.

The second popular evening of this Society was held in Queen Street Hall, on the evening of Wednesday, the 12th ult., when a large attendance of members and their friends assembled to see a collection of transparencies produced from the work of members during the past year.

The entertainment was of a most enjoyable character, the audience continually giving marks of approbation. The pictures illustrated the most diverse localities, including picturesque Scottish scenery, architectural interiors (chiefly Continental cathedrals), and views illustrative of India and Indian life. The whole of the slides were new, expressly prepared for that evening, many of them possessing peculiar merit.

The individual task of the members was shown quite a

much in the colour and treatment of the transparencies, as on the original selection of the subject, many of the tints being peculiarly appropriate to the special requirements of the pictures, browns and warm purple predominating.

Descriptive notes were delivered by Mr. W. H. Davies, honorary lecturer to the Society. The lantern was splendidly managed by Mr. Yerbury. Dr. Hunter proposed a vote of thanks to Mr. Davies, which was heartily accorded.

PHOTOGRAPHIC SOCIETY OF VIENNA.

At the meeting of the Society on the 31st January last, the chair was occupied by the President, Dr. E. HORNIG, for the first time after more than a twelvemonth's absence at Paris, where he has been detained by his duties as chief of the Austrian Commission at the late International Exhibition.

The attention of the Society was drawn to the numerous and valuable collection of objects sent from various quarters for exhibition at the meeting. Prominent among these was the reproduction of a landscape painting in colours by collotype, accompanied by the plates used in printing it, from Herr Albert, of Munich. It is understood that Herr Albert has recently entered into an agreement with M. Ducos du Hauron to work in alliance with him.

Deserving special notice were also a set of twelve cabinet pictures from Herr Salomon, photographer by appointment at Dessau, and a beautiful collection of sixteen selected photographs by Messrs. Schober and Baechmann, of Carlsruhe, reproductions of drawings by the old German masters. Under the title of "Album for Sportsmen and Naturalists," Messrs. Eckert and Muller, of Prague, had submitted a set of twenty-seven photographs of stuffed animals with suitable surroundings; these were greatly approved as drawing copies.

Herr F. BORR sent some stereoscopic pictures on glass of injected anatomical preparations, and attention was drawn to the difficulties under which they had been produced, both on account of the colour of the originals, as well as of the position in which the reproductions were taken. Because of the corrosive nature of the injected fluid the preparations would have fallen to pieces on the least shaking; they were, therefore, obliged to be laid in a horizontal position, and the camera was placed over them and directed vertically downwards.

Dr. HORNIG submitted to the meeting a short report on the working and finances of the Society during the past year.

In reply to an address from Count V. WIMPFEN, eulogising his services at the Paris Exhibition, and gratefully acknowledging the care with which he had watched over the interests of all the Austrian exhibitors, and more especially of those who were members of the Society,

Dr. HORNIG returned thanks for the honour that had been conferred on him, and assured the meeting he would continue, in whatever position he was placed, to work for the benefit and prosperity of the Society.

Herr SLAS exhibited an electrical shutter of his own devising for uncovering the objective. The same is placed inside the camera, and can therefore be worked without the person whose photograph is being taken observing the action. The arrangement consists of a couple of doors moving on hinges at the back of the slide. When focussing, these are kept open by a pin, and are closed by breaking the electrical circuit. An insulated wire permits the operator to stand at any distance from the instrument, and ends in a spring, on pressing which contact is made and the doors fly open.

Herr OSCAR KRAMER introduced the subject of photography in the High Alps. In discussing the respective advantages of the wet and dry processes for this purpose, he expressed an opinion that before long the latter only could be employed in mountain work. From some photographs of subjects in the neighbourhood of the Gross Glockner taken in the year 1863, and comparing them with the same views taken in 1875 and 1878, he took occasion to enlarge on the services that photography could render to natural science, and in this case more especially to physical geology, by proving the advance or contraction of the glaciers. The speaker passed round at the meeting a number of views of Alpine scenery taken by Herr J. Beck, of Strasburg, from the summits of many of the loftiest mountains in Switzerland—Monte Rica, the Mouch, the Jungfrau—at heights varying from 2,000 to 4,635 metres. These had all been taken on dry plates, and, notwithstanding the great difficulty under which the work had been executed, surpassed anything of the kind that had as yet been seen. True to the principle of division of labour, Herr Beck had himself

exposed the plates, leaving the rest of the manipulations to be executed by a professional photographer in Berne. His success seems to prove that good dry plates, any prejudice to the contrary notwithstanding, are exceedingly durable, and are able to endure the extremes both of heat and cold.

Talk in the Studio.

PHOTOGRAPHS FOR SEASONS.—We are favoured by Mr. Warwick Brooks, of Manchester, with some very charming examples of what he terms the "St. Valentine Photograph." The examples sent are vignetted portraits of some pretty girls with an exceedingly pretty outline printed-in. It consists, apparently, of photographs of some embossed lacy paper, forming a border round the vignette, ferns, flowers, and ribbons being tastefully added to give completeness to the designs. As Mr. Brooks suggests, such photographs for various reasons might be produced during dull seasons, and at once advance the art and benefit the photographer.

PRESENTATION PRINT.—The Photographic Society of Great Britain has decided to present to members a print of one of the photographs exhibited at the last Exhibition. The print selected is one of *Betws-y-Coed*, exhibited by the School of Military Engineering, Chatham, which gained the medal for the best single landscape. It is printed from a reproduced negative by the Autotype Company, by their Collotype process, and is cut rectangular, although the original was exhibited in an oval mount. Any member wishing to obtain his copy mounted, can do so by calling for it at the Autotype Company, 36, Rathbone Place, after giving them four days' warning before doing so. After April 15th the Presentation Copy will be forwarded, unmounted, to all members who have not called for it mounted.

NEW CARBON PROCESS FOR PRODUCING ENLARGEMENTS IN THE SOLAR CAMERA.—Dr. Monckhoven, in the "Bulletin of the Association Belge de Photographie," describes a process for making carbon enlargements in the solar camera. A solution of wax in benzine is prepared and rubbed on the surface of the glass with a piece of flannel. The plate is then coated with solution of gum-dammar, and is kept in water for half an hour. It is then taken out and placed flat on a table. A piece of carbon tissue is squeezed on to the surface, and is allowed to dry in the dark, or else the surface is coated with coloured and bichromated gelatine. The gelatine surface is exposed to the image formed in the solar camera through the glass plate, the exposure being regulated by an actinometer. The plate is then plunged for a quarter of an hour into warm water of 30° C. (86° Fahr.), afterwards in water heated to 60° C. (150° Fahr.); the paper detaches itself, and the image is developed as usual. After it has been made insoluble with alum it is allowed to dry, and white gelatinized paper is squeezed on to it. When again dry, the picture is detached. If the transfer paper be of a very glossy surface the picture preserves its polish even when mounted on cardboard, whilst if the gelatinized paper be "mat," it appears like an ordinary single transfer print. The author finishes the description of the process by noting the following novelties in the process through the exposure taking place through the glass plate:—1st. Through never detaching the tissue, reticulations of the image and spontaneous insolubility of the gelatine are avoided. 2nd. The paper remains perfectly flat during a long exposure. 3rd. There is no risk of bubbles or want of adhesion to the temporary support, which often occurs in the double transfer process. And 4thly. The prints are not reversed, and are exquisitely sharp.—*Photographic Journal*.

ELECTRIC LIGHT IN THE BRITISH MUSEUM.—Some months ago an article strongly recommended the use of the Electric Light in the reading room of the British Museum. The experiment has recently been made, and, we learn, with success. The *Times* says: "The experiments with the electric light recently made in the reading-room of the British Museum have satisfied the trustees of its applicability for the purposes of the room as far as the amount and distribution of light are concerned, although the full number of lamps was not employed. On three occasions the light was turned on at dusk, in order to enable readers to continue their studies without interruption for another hour. As far as could be ascertained, they were enabled to work by it without difficulty, even at the tables where the light was weakest. The experiments were made gratuitously by the Société Générale d'Electricité, who use the Jablochkoff candles. They are discontinued for the present, but a further

trial of the light will probably be made some months hence, with the view to utilize it on dark days and for extending the hours for using the reading-room in the winter."

FIXING THE EYE IN PORTRAITURE.—The *Danbury News* says:—"English photographers avoid the strain on the sitter's eyes, which usually results in a ghastly stare, by having a clock-face as the point to which they are directed, the eyes being allowed to travel slowly from the figure XII all round. The rotary movement of the eye ball in adapting itself, step by step, to the figures upon so small a circle at such a distance is so excessively fine as to cause no interference with the photographic process. The eyes are excellently well defined, even to the iris, and the pictures have a marked superiority over those previously taken in the manner in which the details of the eyes are reproduced. The sitters have expressed themselves as not having had any strain upon their eyes."

THE HECTOGRAPH.—Herr Levitus, of Vienna, lately exhibited an arrangement called a "hectograph" for multiplying writing, which, though not directly connected with photography, may prove interesting. The hectograph consists of a flat sheet iron box filled with a gluey mass, upon which, after moistening and drying it several times, a sheet of paper, written upon with a specially prepared ink, is placed, and lightly rubbed with the hand. When the paper is raised the writing is found to be transferred reversed to the film of glue, and from that film, by simply placing pieces of dry paper upon it and rubbing them, some fifty impressions of the writing can be taken in a short time. The negative impression can easily be removed from the film by washing with warm water, and the latter can be used over and over again for a long time.

To Correspondents.

TIVOLI.—On another page we give the formula for Mr. Harman's pyrotechnic fire. It is probable that any druggist will prepare it for you. We do not know where Mr. Harman purchases his; but unless you were in the same neighbourhood, it might be of no use to you to know.

PYRO.—We believe the remuneration of an apprentice in photography is invariably the subject of specific agreement, and that no general rule exists. In one case which came under our knowledge, the apprentice was bound for three years, receiving nothing for the first year, five shillings weekly for the second year, and ten shillings weekly during the third year.

M. M.—So far as we know, the use of any kind of artificial light has not been patented for photographic purposes, only the appliances for using various lights. Mr. Vanderweyde has not patented the use of the electric light, nor have Messrs. Alder and Clarke patented the use of any special pyrotechnic compound for photographic purposes. They have each patented certain appliances for producing portraits by artificial light. Mr. Harman's, described last week, is quite free for you to use, and that of Mr. Palmer described a few weeks ago. Your lament to the effect that every valuable novelty in photography is locked up by patent restrictions is really not based on facts; and if it were so, you would scarcely complain, if you were engaged in gold digging, that every one who found a big nugget kept it for himself, instead of dividing it among his fellow diggers. Be energetic and hopeful, and avoid looking on the dark side of things.

G. L. M.—There are very rapid collodion emulsion processes, but, so far as we know, none so rapid as the gelatine processes. Some years ago we reported trials of dry plates, by Colonel Wortley, against the most rapid wet plates then known, and the dry plates of Colonel Wortley were victor.

COLLOTYPE.—The autotype process, at the present time exciting considerable attention in America, is, we understand, a photocolotype process by M. Obernetter. It is stated to be a great improvement on previous processes. Some results we have seen are exceedingly good. So far as we know, the details of the process have not been published.

TRY AGAIN.—In our experience the best method of securing a warm tone in collodion positive images for transfers or transparencies consists in, besides having all the chemicals in good working condition, giving a full exposure and rapid development, using pyro and acetic acid. If the exposure be short, and the development has to be pushed a little, a black tone is generally the result. 2. No. Iron generally gives grey tones.

LITTLE PHOTO.—If our correspondent will furnish us with his present address, or if he will call at 59, Vincent Square, Westminster, he may hear of something to his advantage.

AMSTERDAM.—If Mr. Haakman, Secretary of the Photographic Society in Amsterdam, will forward the medal awarded to Mr. A. M. Penn, it shall be duly forwarded to the proper quarter. Several correspondents in our next.

The Photographic News, March 28, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE PAGET COMPETITION—THE PRESENTATION PRINT OF THE PHOTOGRAPHIC SOCIETY—PHOTOGRAPHY AND THE DRAMA.

The Paget Competition.—The last day for forwarding dry plates for the Paget competition is fixed for Monday next. We have little need to remind our readers, for notices to that effect have been broadly circulated. "The negatives and dry plates, in sealed packages," are to be addressed to Mr. Sebastian Davis, the honorary secretary of the award committee, at the Society's place of meeting, 5A, Pall Mall East; and no intending competitor will be permitted to take part in the contest if he does not fulfil these conditions. The award committee have no slight task before them, even if the competitors do their utmost to assist by strictly complying with regulations, for since gelatino-bromide plates have come to the fore, there can be little doubt that the number of competitors will be increased. We trust the award committee will take a thoroughly practical view of the matter, and give us a process which shall be successful under something less than scientific conditions. There is no need to fear that the matter will not be thoroughly tested by the men chosen to act as jury, for they are one and all thoroughly well acquainted with the subject they have to deal with. It will be remembered that when, two or three years ago, the French Government and the Photographic Society of France organized a competition of the same kind at Paris, and for pretty nearly the same object, there were but two competitors, or, as it turned out, only one, who had complied strictly with the regulations. This was M. Alfred Chardon; but the process he submitted was so satisfactory that he was at once adjudged the winner. There can be no doubt that M. Chardon's process—a collodion emulsion method—is a very good one, as M. Davanne, the president of the jury, was able to testify by actual trial; but it does not equal in sensitiveness the gelatine emulsion processes of the present day. In the case of M. Chardon the prize was but 500 francs, or £20, but the *Académie* subsequently conferred some honorary distinction. Captain Paget's prize, on the other hand, is of the value of £50, and therefore well worth fighting for. We only hope that the competition will not turn out simply a "walk over" as in Paris, but that there will be some good and new processes forthcoming. Of course, skill and acquaintance with materials are always necessary to secure good results, but we hope that the chosen method will be one that can be worked by any one promising these qualifications. It is too often the fault of dry processes that they yield only first-rate pictures in the hands of those who have elaborated them and worked them out in detail, and who are acquainted, therefore, with the behaviour of the materials at various stages. Given into the hands of another equally good photographer, the process is less successful, and the consequence is that we see many gentlemen working many processes, each giving satisfactory results, although differing in their details. What, of course, is generally wanted, is a good and simple process, that depends not so much upon the intimate acquaintance of the operator, but which furnishes equally good results in the hands of the general body of photographers. If the award committee can pick us out such a process from those submitted, we, for our own sakes, shall be deeply grateful.

The Presentation Print of the Photographic Society.—It is pleasant to find that the Photographic Society has once more gone back to its early custom of distributing Presentation Prints to its members. A very large proportion of the latter are unable to attend its meetings, by reason of their residing at a distance, and many more are amateurs who would especially prize a print such as the Society was formerly in the habit of presenting to all members. We

trust, now that the custom has been revived, it should not be lightly abandoned. There should be no reason why the Committee which awards the medals at every Annual Exhibition should not also take upon itself the duty of selecting a Presentation Print. It would be very strange if the lucky photographer whose work was selected would not feel honoured by the distinction, and there is little doubt an arrangement of some kind could be entered into, alike satisfactory to him as to the members. On the present occasion, as our readers are no doubt aware, the print selected was one of the finest in last year's Exhibition, and gained a landscape medal. It was exhibited by the School of Military Engineering at Chatham, until lately under the charge of Captain Abney, and now no less ably directed by Lieut. Darwin, the Present Honorary Secretary of the Society. The impression is to be printed by the Collotype process, from a negative reproduced by the Autotype Company, and, although the experiment is a bold one, we believe that the beauties of the picture will not suffer. From the circumstance that the scene is Bettws-y-Coed, in North Wales, and that no Royal Engineers are to be found stationed near that sylvan retreat, we may well infer that the picture was secured during the holiday of one member or other of the School in question, while rumour goes so far as to say that it is the director himself, and no other, who is the author of the charming negative. How far this is true we have no means of knowing, since the catalogue only tells us that the School was the exhibitor, while we know that to the School was the medal awarded. One thing is clear, that we may fairly congratulate Mr. Darwin upon his direction of a body which can produce so fine a picture as the Presentation Print of the Photographic Society for 1879.

Photography and the Drama.—It seems strange that playwrights should always make a muddle of it when they have to do with photography. In a drama that has some very sound and striking points about it, recently produced at the Grecian, the same absurdity is committed as that in the *Octoroon*. In Dion Boucicault's play, it may be remembered, we have the circumstance of a photographic plate revealing a picture after it has been treated in a very bad way. A man is sitting down having his portrait taken, when he is suddenly murdered. The instrument is open during the whole of the operation of killing, and hardly is the affair ended than the boy entrusted with the capping of the lens returns. The latter has been instructed to open the camera, and then run to a tree and back again, before capping once more. In the meantime, as we have said, the deplorable incident in question has taken place. The boy closes the lens, and then turns round to see the sitter has been murdered. He knows nothing of cameras and lenses, and, in his ignorance, imagines the apparatus must have done the mischief, whereupon he proceeds to knock the camera to pieces. Despite this ill-treatment, however, the plate is subsequently recovered, and behold, when it is examined, there is a picture upon it of one man murdering another; proof enough to secure the conviction of the malefactor. We believe there is nothing said about developing the plate or fixing it, but these are, after all, small matters. In the *Last Stroke of Midnight*, at the Grecian Theatre, there is an incident much resembling that in the *Octoroon*. In the last act the hero and his bride are about to be made happy, when the villain of the piece, one Gonzales, enters and charges the young man with the murder of a comrade. The hero appears unable to prove his innocence, and there is a probability of the accused being dragged away a prisoner. In this dire strait, a photograph is fortunately forthcoming, and this proves to be a picture of the man in the act of being murdered. There is the murderer cruelly stabbing his victim, and the murderer is shown to be no other than Gonzales himself. It is a pity our dramatists cannot employ photography in their works without going the length of such improbabilities.

COLOURED GLASS SUITABLE FOR DEVELOPING ROOM.—EMPLOYMENT OF SULPHATE OF QUININE AS A SUBSTITUTE.

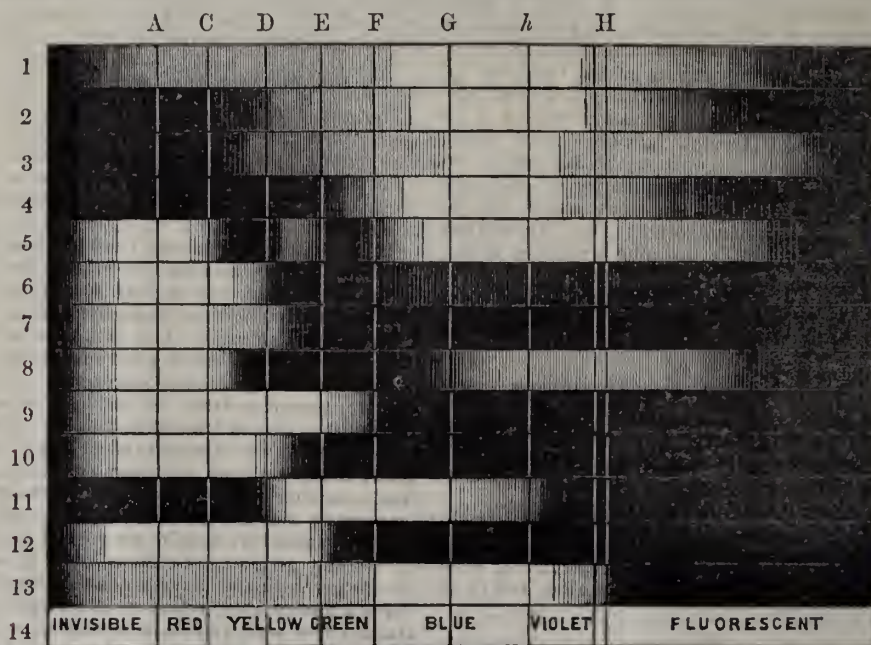
BY CAPTAIN ABNEY, R.E., F.R.S.*

THERE seems to be a great deal of mystery enveloping the subject of the light which is admissible into the dark room, and I have deemed it advisable, as far as possible, to clear up some of the hallucinations which exist.

In choosing a glass for the dark room it is above all things necessary to know what silver compound is to be used in it, as on that point rests the choice to be made. The accompanying photographs will aid the photographer in unravelling this knotty point. They were taken in the following manner:—An ordinary spectroscope adapted to photography was employed, and close in front of the slit a card cut in this manner was placed—



the top opening being first of all in front of the top of the



1, Special collodio-bromide; 2, gelatine bromide; 3, collodio-bromide; 4, bromo-iodide; 5, cobalt glass; 6, ruby glass; 7, chrysoidine; 8, magenta; 9, flashed orange; 10, stained red glass; 11, bottle-green glass; 12, aurine; 13, quinine.

Now a glance at the diagram will show that for the bromide there is no absolutely safe single glass to employ by which to develop. If the light be strong, the ruby glass (Fig. 6) lets through the red a little yellow, green, and blue; whilst the stained red (Fig. 10) lets through the orange, to which this salt of silver is sensitive. How, then, can we secure immunity from the reducing action of light? By combining the stained red and the ruby together. This admits plenty of light; but a safer combination than these is a combination of cobalt glass (Fig. 5) and stained red glass. In the photograph is shown the absorption spectrum of cobalt glass. It will be seen that it cuts off the green and yellow entirely, but allows one deep band of red to pass, and a faint band in the yellow-green. The

slit. When any glass was to be tested it was held in front of the cardboard, the plate next placed in the camera, and sunlight reflected on to as much of the slit as was visible. The white light was thus filtered, as it were, through the glass, and the colours absorbed found no means of access to the sensitive plate. The plate was coated with the blue silver bromide which I prepare by my method, and which is sensitive to all radiations of the spectrum. The sunlight is then reflected away from the instrument, the lower aperture in the card brought in the front of the slit, leaving the bottom half uncovered, and another piece of glass or absorbing medium placed in front. The exposure again takes place; and we have the absorption spectra of two glasses impressed one below the other. The fixed lines of the solar spectrum show exactly where the absorption takes place.

The first four photographs show the rays to which the different kinds of films are sensitive. The next eight photographs show the absorption spectra of different coloured media. From these we shall be able to form an opinion of the respective merits of the different glasses. You will see that there is no action on the plate below the green where bromide-iodide is used, but that it extends to C, where the bromide is used.

stained red glass will cut off the blue and the yellow-green as shown in the photograph (Fig. 6). Therefore all the light that will pass is contained in that narrow band of red light which can traverse both the stained red and the cobalt blue glasses. When using coloured glass, the stained red and the ruby are, however, the best combination. Some of the other photographs show that other modes can be employed to obtain non-actinic light. Here we have photographs of the light passing through a collodion film dyed with magenta (Fig. 8), with aurine (Fig. 12), and chrysoidine (Fig. 7). It will be noticed that the combination of magenta with either of the other two is as effective as the cobalt and stained red glass. To the photographer who has dyes at his disposal this is a boon, since by coating one side of an ordinary sheet of glass with one dye, and the other with one of the others, he may procure a light

* Read before the Photographic Society of Great Britain.

which is practically non-actinic. It is this mixture that I recommend for coating the shades of lamps or gas lights. Personally I would never develop a bromide film by daylight if I could use artificial light.

When we come to the bromo-iodide film, we see that the ordinary orange-glass (Fig. 9) is not quite safe to use, since it lets through some of the green rays; and that the stained red (Fig. 10) is the best glass to employ. The latter, being orange-coloured, is a nicer light to work in than that coming through ruby glass. It will be noticed that green glass (Fig. 11) is useless in any case, and that there is no advantage in any combination of it with the glasses tried. It will be seen that the red of the spectrum which traverses this glass lies near C, to which the bromide is sensitive. Stained red and green glass sometimes will give a yellow-orange tint, which perhaps may be pleasanter to the eyes than the deep orange of the light coming through the former alone. The light, however, is seriously diminished by the combination. The advertised "Non-actinic Glass, Tested by the Spectroscope," is apt to mislead the unwary; the diagrams above, it is hoped, will enlighten the photographic public.

Before concluding, I would wish to touch upon a recent—what I may call—controversy, regarding the employment of fluorescent bodies to cut off what is called actinic light. Hunt, in very early days, in his researches on light, called attention to the action of sulphate of quinine, and it might have been thought that this ghost of a fallacy would have been effectually laid many years ago. It has cropped up again, however, and in a refutation of the fallacy some astounding statements have been made, which, if true, would have made it necessary to reconsider the theory of fluorescence. I pass this by, however, and show you what really does occur. In this photograph, half the slit was exposed to unshielded sunlight (Fig. 13), and half to sunlight screened by a cell containing a solution of sulphate of quinine (Fig. 14). It will be noticed that the spectrum is bounded in the latter by one of the H lines at the extreme visible limits of the violet. In other words, the solution of sulphate of quinine cuts off the ultra violet rays, and no others.

It is to be hoped that this result may convince photographers in general of the futility of using such solutions to cut off those rays which can perform work as chemical action in silver salts, unless a silver salt be found which is only sensitive to the rays so cut off. A search for such a compound would hardly repay the trouble.

I would draw attention of the members to the fact that the production of these illustrative photographs is due to my discovery of the preparation of silver bromide, which is sensitive to all radiations, from the ultra red to the ultra violet.

LIGHT, AND ITS WORK IN ABSORPTION.

BY CAPT. W. DE W. ABNEY, R.E., F.R.S.*

LET us now, while we have the last beautiful experiment in our mind's eye, endeavour to see what has taken place. If I take one of the leaves of this scarlet flower and examine it by transmitted light, I find it red, that is, it absorbs the blue and yellow to a great extent. Now, then, is it that we see it red by light which is reflected from it? Surely if it allows the red to pass through it, you would suppose that the light reflected would not be that which it transmitted.

Let me endeavour to explain this by an experiment. Here I have a liquid which, by transmitted light, is red; I hold a sheet of white paper behind it, it is still red; but now I place a black cloth behind it, and allow the light to shine on it. The colour is gone—it appears very nearly black. I still keep the cloth in its place, and sift some fine powdered chalk into the fluid. Immediately we have

the tracks of the chalk particles illuminated with a red light. The red colour starts into visibility. Why is this? The small white particles of chalk act as so many mirrors—they reflect back the light shining on the particles. In going and returning, the light passes through a medium which absorbs all but the red light, and consequently the reflected light which re-enters the eye is red. Apply this to our red leaf. A leaf under the microscope appears as built up of innumerable cells, each of which contains a red fluid. The white light reaches the interior of the leaf, and the light which passes through the cells then is robbed of all except the red light. Passing through the fluid and the cell sheath it comes in contact with another colourless cell sheath, part of the light is reflected, and part transmitted through to other cells. Nearly all the light reflected has passed through the red fluid, and therefore reaches the eye of the same colour as that which the fluid transmits.

It is the *irregularity* of the cells which causes the light which reaches the eye to see the same colour as that which the leaf transmits. I will briefly explain the changes which occur in the white flower when placed in the spectrum. In white light the fluid in the cells transmits rays of every colour composing white light. When in the red part the ordinarily colourless fluid in the cells transmits the red, and the irregularity of the cell tissues causes the transmitted light to be reflected, hence it appears red, and so on.

So with our red book, the fibres reflect the colour which the capillary tubes hold in their tenacious grasp.

Perhaps the following experiments will aid us in our conception. Here I have differently coloured cardboards. One by one I place them at an angle with the lamp. The light is reflected from their surface on to another sheet of white card. The latter, it will be seen, takes the hue of the former.

In the case of metals we have a different phenomenon. Take gold, for instance; it reflects yellow light to our eyes. Our senses tell us that we cannot see through a sovereign; but by mechanically rolling we can reduce gold to a thickness in which it is transparent; 280,000 of these transparent leaves piled one on the top of another would reach to the height of one inch. When a film of this metal is placed in front of the light we see that the gold has a green tint by transmitted light. If gold behaved like our scarlet flower it would reflect green light. If we take away the green from the pure spectrum, and recombine the remainder, we should evidently get a purplish tint; and supposing that the gold reflected the light which it partially absorbed we should see gold of a purple colour.

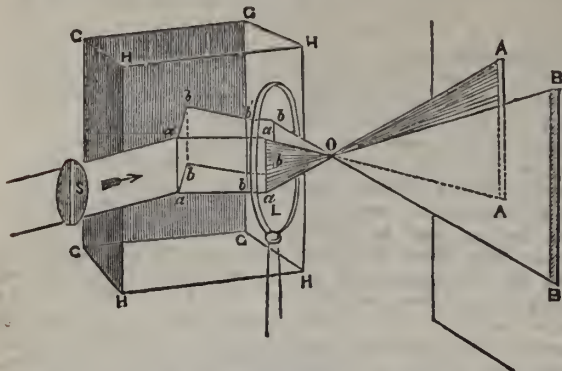
We may go a stage further, however, and show you that in the green tint we have probably other colours. Here I have a film of gold, which is produced by acting on metallic silver with a solution of chloride of gold. The gold occupied the position of the silver, and the silver chloride formed was dissolved away. In this case the film is of a fine purple colour. Again, here I have a very dilute solution of a salt of gold, and if I carefully reduce it to the metallic state whilst in solution we shall find that sulphate of iron, and you see that my surmise is correct. Now then; suppose we take away the blue and the red which form the purple, from the spectrum, and the green which shows so markedly by transmitted light, we shall get nothing but yellow left, and this agrees pretty well with the reflected light of the gold.

Silver, again, which in thin films transmits indigo light, can be made to assume a reddish and a greenish colour by transmitted light, and when these are abstracted from the spectrum we shall have whitish light remaining, which corresponds to the colour of silver. In other words, the colours which are not transmitted are reflected, and we get a case of selective reflection.

There are some other bodies which show this selective or metallic reflection. This magenta dye, for instance, I have mixed with collodion, and it transmits red and a little

*Concluded from p. 113.

indigo. I have coated a thick glass plate with this collodion, and use the glass surface as a reflector to reflect the slit of the lamp upon the screen.



In fig. 3, G H is the thick glass, S the slit of the lamp, through which a beam of light passes to a a on the first surface of the glass, H H H H; thence the beam is reflected going through the lens L, by which it is focussed on the screen, giving an image, A A, of the slit. Another part of the beam is refracted to the back surface, G G G G, of the glass plate, which is coated with the dye, and is reflected from b b. It again is refracted at b' b', and passes through the lens L, forming an image, B B, of the slit on the screen. The first image is perfectly white, since the light is reflected from the front of the glass; the last image tells us of the character of the light reflected by the dye. In the case of the dye we are now experimenting with we should find, if analysed by a prism, that the colours reflected were complementary to the colours transmitted, the image from the surface of the glass covered with the dye being of a blue green tint.

Here is another dye, which, like the last, when looked at in lumps, has a metallic lustre; by transmitted light it is purple; but when put before the lantern in a film behind the glass, we see that it reflects an olive-green tint. Dyes which have not this metallic lustre do not act in the same way. This dye transmits yellow, and you will see that it reflects yellow light. The reason of this difference in the powers of reflection is somewhat obscure at present; but we may hope soon to obtain more information on this subject. Applying the principle of work to metallic reflection, it will appear evident that there will be less heating and chemical action in those bodies which exhibit it than in those which absorb the rays, for in one case certain waves are only driven back, and do no work in the body, whilst in the other they are absolutely extinguished.

We may state that ordinary materials met with in nature, as a rule, reflect the transmitted light, and that the cases of metallic reflection occur but seldom, and may be looked upon as peculiar exceptions.

I have now come to the end of my task. I have endeavoured to give you an idea of light, and what it is, and the effect of material matter upon it. We have seen that the energy carried by light either from the most distant star, or other source of light, such as a candle or lamp, is, as a rule, partially absorbed by the object on which it falls, and does work of some kind in that object.

Suppose it had pleased the Author of nature to have made a law that no absorption should take place. How uninteresting to our eyes, as at present constituted, would the world appear! The absence of colour would rob us of the very poetry of our existence, that poetry which is innate in every mind. No glorious sunsets, no blue sky, no rainbow, no green fields, no lovely landscapes with mellow distances, would charm us. The earth would be bereft of all her artistic beauty; [and if there were no absorption we should have to exist in that icy cold which we can only reason about, and have never felt.

It may, perhaps, be said that such an absence is impossible. It is owing to the wise Providence that watches over us, but it is part of the business of science and men of science to realize what the effects of such an impossibility would be, and to lead the mind to grasp how kind, how beneficent, is the Ruler of the universe and the Giver of its laws.

THE USE OF SALICYLIC ACID IN PHOTOGRAPHY;

ITS SPECIAL APPLICATION TO CARBON PRINTING AND GELATINE PROCESSES.

BY DAVID BACHRACH, JR.*

FOR more than a year I have been experimenting with various of the well-known antiseptics introduced of late by chemists with a view of working, with something like certainty, carbon tissue during the five months, at least, when the thermometer gets above 80° in our climate. Our establishment is one of the thirteen who bought the Lambert Processes in Baltimore, and is the only one now using it regularly, and then only for porcelain miniatures and the reproduction or enlargement of negatives. Like the vast majority of those who bought, we consider it utterly impracticable as compared to silver printing for regular commercial work, but hope to see the day when it will become practical for general use, for the sake of its undoubted permanence when properly practised. The process as given out by Lambert we pronounce (and we are of the majority), so far as the extravagant claims made for it by him are concerned, utterly unreliable in this latitude at least five months in the year. Yet it was so desirable to us for the purposes we use it, that I instituted a careful series of experiments to overcome the difficulties. From long experiments with gelatine work in the photo-engraving process, it was not long before I found that carbon tissue acted precisely similar to the gelatine films in certain kinds of weather. Gelatine, glue, and similar substances undergo a peculiar sort of decomposition in the presence of the chrome salts when the thermometer reaches 80° and upwards, and especially in what is termed muggy weather, when the atmosphere is filled with moisture. This takes place when the sensitized tissue is in a moist state, when drying, and continues more slowly when fully dry.

The film when examined under a microscope presents peculiar granulations well known to chemists, and very similar to those presented when such organic substances are decomposing and full of animalcules. Ice used in the bichromate solution does not do a particle of good unless the film is dried at a very low temperature, when the atmosphere favors such decomposition. I find further that such gelatine, even where it has been acted on by light, will afterwards be liable to decompose and run together, as two miniatures made under such circumstances have been returned to us utterly spoiled. I also find that when the film was in good normal condition, and not decomposed, the pictures would stand the severest tests. The remedy, then, was evidently to be found in this direction: to find a substance that would act as a perfect antiseptic, and not affect the general result otherwise. After trying almost all the substances known in practical chemistry for this purpose with but limited success, I concluded to try the latest of them all, which I found just the thing. Salicylic acid is another of the wonderful products of the distillation of coal tar, and is similar in some properties to carbolic acid, but with none of the objectionable features of the latter. I dissolve salicylic acid in about an ounce of alcohol to a half gallon of the bichromate sensitizing solution, sufficient to give from one to one and a half grains of the acid to every ounce of the latter solution in hot weather, and about half the quantity in cold weather. It is necessary in this case to use somewhat more of the bichromate to the same quantity of water, as the salicylic acid makes it slightly less sensitive, and makes the contrasts stronger, with the

* *Anthony's Photographic Bulletin.*

solution as usual. One who has not tried it has no idea of the benefit to be derived from its use. In cold weather sensitized tissue may thus be kept indefinitely with the least care in perfect condition, as soluble in a month as on the first day; and during the latter part of last summer, when I first used it, I kept the tissue perfectly good for over a week, something I had never been able to do before; and how much longer it would have kept I cannot as yet tell.* All reticulation disappears, and you can rely on every piece of tissue without waste. And the beauty of it is, it is always of the same degree of sensitiveness, and does not vary. In fact, this substance keeps gelatine in its normal condition, subject only to the change effected by exposure to light. Of course I cannot yet tell whether the proportions I have given are the best, but I hope to hear further and have more light thrown upon the subject by other experimenters. With this substance it is not only possible, but, I think, preferable, to use the bichromate of ammonia, a more sensitive salt and giving greater detail than the bichromate of potassium. It must be remembered that the acid acts also as a restrainer, and consequently with the same strength of solution will give harsher results than when the solution is used plain. I also use some glycerine in the sensitizing solution, to prevent the tissue from becoming horny and liable to crack in extreme cold weather. In working with tissue one thing is necessary to bear in mind: if dried at too high a temperature, and too rapidly, it has a tendency to wash out and lose detail in the whites and work with great harshness, giving a condition of film very undesirable, and causing many failures in the double transfer. It has under such circumstances a dull surface, lacks all brilliancy, and loses the fine, smooth surface of the film in the normal condition. Of course salicylic acid tends to prevent this to any great degree, even under such circumstances; but it will certainly prevent it at ordinary summer heat. The salts of the acid, such as the well known salicylate of soda, seem not to retain any of the antiseptic properties of the acid, and I have as yet not found them available as a substitute. They would have the advantage of being soluble in water and not affecting the sensitizing solution in the least, though I have had no perceptible trouble on that score. It is very desirable to use the ammonia bichromate in preference to the other, when found practicable, on account of its more careful and uniform manufacture, not being such an article of commerce as the potash salt, and consequently acting more uniformly as well as having less tendency to work harshly.

In experimenting further, I found that salicylic acid was very valuable to use in summer for keeping sensitized plain paper from the rapid decomposition to which it is liable when used with ammonia-nitrate of silver. I use two grains to each ounce of salting solution, and have not had the paper decompose and turn hopelessly yellow on the solar camera board since. In extremely hot weather it has often done so when using a negative that required a long exposure to print. It seems to have no perceptible effect on the sensitiveness of the paper when used in the quantity indicated. I have also used it as a substitute for citric acid in the process for printing on painter's canvas which I published some years ago. It has the same beneficial effect in that, sometimes enabling us to leave a canvas on the camera over night, to be completed next day, in case of failure of light. It will also be found of value as an aid to cleanliness in the developing processes for solar enlargements, by using it as indicated in the salting solutions. Finally (but this has long been known), it is invaluable as an antiseptic for paste, gum, and gelatine solutions for use in photography, preventing decomposition and mouldiness, to which is sometimes due the fading of prints. In conclusion, I hope that others pursuing this subject may aid in perfecting and making exact its uses (which are evi-

dently manifold), and give the benefit of their researches to the fraternity.

Caution in using Salicylic Acid.—More should not be used than is required to produce the desired effect; and the proportions given are the largest quantities necessary. It is advisable to occasionally add a little alcohol to the sensitizing solution to make up for loss by evaporation, otherwise the salicylic acid will separate as a flocculent precipitate, it not being soluble in water. Whenever this precipitate forms, a little alcohol added to the solution and well shaken will redissolve it. It would undoubtedly be preferable if one of the combinations of the acid with a base, to form a neutral salt solution in water, could be made to serve the same purpose, but the writer thus far has had no time to experiment in this direction, and hopes that others will find such a substitute and publish it. A combination of the acid with lime, forming salicylate of lime, would seem to be a good direction to experiment in; but in cold weather there is no practical means of fully testing it, as there is then but little trouble with tissue. Such a salt has the advantage of not affecting the sensitizing solution in the least, while with the acid a stronger solution is necessary to avoid too much contrast and prevent the light tints from washing out.

NEW PATENT BILL.

WE append the following summary of the principal provisions of the new Patent Bill introduced into Parliament.

1st. The duration of provisional protection is to be extended from six months to one year, and the stamp duties thereon lowered to half their present amount.

2nd. A complete specification must, however, be filed before the expiration of nine months from date of original application, or the protection will terminate at the end of the twelfth months, and cannot afterwards be renewed.

3rd. The complete specification shall be immediately published, with all other documents relating to the case, and for a prescribed period anyone shall be at liberty to oppose the grant of a patent.

4th. If there be no opposition, the applicant may give notice to proceed, and secure his patent, for half the stamp duties now levied.

5th. A patent shall last for twenty-one years instead of fourteen, but shall become void if the £50 and £100 stamps be not duly paid at the end of the third and seventh years respectively, and an additional stamp of £100 before the end of the twelfth year.

6th. Patents can be amended or added to hereafter, but with such fees and limitations as to make an amendment—especially if an addition—almost as costly as an original patent. The amendment, however, then becoming part of the original patent, is not subject to additional stamp duties (this, however, is still a great improvement over existing practice, and all alterations mentioned so far are in favour of the patentee.)

7th. The Crown shall have power to use any patented invention, paying the inventor such royalty as the Treasury shall consider fair.

8th. If an inventor do not work his invention in the country within three years of grant, and if he refuses to grant licences on such terms as the Lord Chancellor shall consider reasonable, the patent will be annulled.

9th. Inventions first patented (or imported from) abroad can in future be patented in England by the foreign patentee (he being the true and first inventor) within six months of the date of the foreign patent, or of the date of this Act. But such patents will fall with the expiration of any foreign patent for the same invention, whether granted before or after date of such patent.

10th. The Lord Chancellor shall have power, in certain cases, to allow a patentee who has accidentally omitted to pay his tax in time, to pay it within three months after it became due, and thereby save his patent.

11th. All patents applied for before the passing of the Act to be independent of all its provisions except Article 10.

12th. The modes of procedure are altered in many respects interesting only to patent agents and lawyers.

W. P. THOMPSON & Co., *Solicitors of Patents*,
323, High Holborn, London, and 6, Lord Street, Liverpool.

* In a subsequent letter Mr. Bachrach informs us that he had developed tissue after having been sensitized for six weeks.—Ed. A. P. B.

The Photographic News.

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PHOTOGRAPHIC REPRODUCTION OF SHAKESPEARE QUARTOS.

THERE is no purpose, perhaps, to which photography can be applied in which its capacity of accurate copying becomes more valuable than when it is employed for reproduction of old and unique documents. Whether the interest of the document be of a legal or a literary kind, unchallengeable accuracy is of vital importance. And, apart from the actual value of this accuracy, there is another kind of interest of no mean kind in such facsimile reproductions. The eye lingers lovingly upon each quaint form of letter or archaism in spelling, and all the associations of an olden time gather round, and invest the page with a strange glamour. We have had the privilege of examining the original manuscript of some of Milton's works, kept carefully under lock and key in the library of Trinity College, Cambridge; and we have the good fortune to possess a lithographed facsimile of one of these manuscripts. It is admirably copied by the hand of an expert in such work; but although admirably done, and not without interest as a good copy, it possesses none of the special interest of the original, in which every line was traced by the hands of the master; nor does it possess the interest of a photographic facsimile, which seems to be in some sort a part of the original, and only less in interest than the original. Photography has already done much good service in this way, but in nothing, probably, has its work exceeded in interest some of the reproductions, as photo-lithographed facsimiles, of original editions of Shakespeare's works. The photo-lithographed copy of the first folio, in all respects a facsimile of the edition of 1623, is a work of rare value. A similar copy in a reduced size, published a few years ago, which, oddly enough, we have never seen, was also a very valuable boon to the student of Shakespeare. But probably nothing exceeds in interest and value the series of facsimiles of the original quartos, which were the first published copies of the respective works, and were the only copies issued during the author's life. The project is to issue the thirty-five quartos, each in photographic facsimile, from the best accessible copies. The project will be carried out under the superintendence of Mr. J. F. Furnivall, an enthusiastic Shakespeare scholar; and, what is of more importance, the photo-lithography will be executed by Mr. W. Griggs, who is known as an expert of rare skill and experience in this branch of work. The volumes will be issued at six shillings each in cloth with morocco back, and when it is remembered that an attempt at hand-traced facsimiles were issued at five guineas each by Mr. Haliwell, some years ago, the value to Shakespeare students of the present issue may to some extent be estimated.

The first of the series, just issued, is the facsimile of the Hamlet of 1603, manifestly a first and very crude sketch of the completed and matured work, but of inestimable value as an aid to the study of the completed play, which will form the next volume of the series. The work is exceedingly well done, and singularly even and uniform in effect. It will, we doubt not, be greeted with much pleasure by all Shakespeare scholars and students, as the most valuable aid to the accurate and satisfactory study of Shakespeare which has hitherto been issued.

Critical Notices.

THE NEW PRACTICAL PHOTOGRAPHIC ALMANAC for 1879. Edited by J. H. FITZGIBBON, St. Louis.

SINCE we sent out the first issue of our annual it has had a numerous following, in this country and in Continental Europe and America; but there has been none more full of genuine practical interest than the first yearly venture of our friend Fitzgibbon, now before us. It is very essentially *practical*, as it aims to be. It contains excellent contributions from men of high position on both sides of the water. We were about to conclude by recommending the little work to our readers, when we remembered that it was not published or readily accessible on this side of the water: so we substitute for that recommendation a promise to lay extracts from time to time before our readers.

A POCKET-BOOK FOR CHEMISTS, PHOTOGRAPHIC STUDENTS, &c., &c. By THOMAS BAYLEY, Assoc., R.C. Se. J. (London: E. & F. N. Spon.)

THE little book before us is one of the most valuable reference books on all technical points interesting to the chemist that we have met with: tables of every kind, and detailed conversions of grammes into grains and similar matters; solubilities of bodies, specific gravities, boiling points, standard solutions for purposes of analysis, &c., &c. It will frequently save the experimentalist much trouble and waste of time, and is worthy of all commendation.

FRENCH CORRESPONDENCE.

INVENTORS IN THE PHOTOGRAPHIC SECTION OF THE LATE INTERNATIONAL EXHIBITION.

BROUGHT face to face with the movement for the erection of a monument to the memory of Nicéphore Niepce, we naturally think of the numerous inventors who have enriched the photographic art with the results of their unweary labours. Justice is always late in being done to those indefatigable inquirers who fight in the front rank against prejudice and incredulity, and who often, in this life, reap no other reward but misery. The acquisition of fame and distinction has occasionally not preserved inventors from dying of hunger, and there are many who never lived to reap their long-coveted honours. There seems to be a fatality attending them, and an Edison, who is able to fill the whole world with the *eclat* of his successes, is in reality an exception to the rule. For example, honours are only awarded to Nicéphore Niepce many years after his death; and in doing this even—excellent as the intention may be—we are committing a wrong, for we are separating his memory from that of his fellow-worker in the heliographic art, the illustrious Daguerre. Why should the fame of the one be celebrated to the exclusion of the other? Is the present generation, in its endeavours to appear grateful, to deprive Daguerre of the honour of an invention that was almost simultaneous with the discovery of Nicéphore Niepce? If we hold the latter to be alone deserving of public admiration, are we not denying

any value at all to the work of the former? And in that case, how comes it that even during his lifetime he was permitted to claim his great invention as his own, and to confer on it the name of Daguerreotype? These questions seem to me to have a logical significance, and it may be that the facts of a tardy reparation, with their own brilliant eloquence, will come to resolve them at the proper time and place. It may be said of inventors as of saints—a certain time must elapse before they can be canonised.

The unfortunate fate that clings to all inventors has once more manifested itself at the Paris Exhibition, and I am not sorry that the subscription for the monument to Nicéphore Niepce affords me an opportunity of awarding to them the well-deserved tribute of praise which the jurors seem to have forgotten to bestow on them. I may be allowed on this occasion to give a short retrospective review of the labours of the artists who have devoted themselves to the advancement of photography without having received the pleasure of an official recognition, in the hope that it can only be of benefit to those immediately concerned, asking, at the same time, pardon of the readers of the PHOTOGRAPHIC NEWS for entertaining them with the details of a now defunct exhibition.

Much talk has been occasioned by the numerous complaints to which the award of prizes by the photographic section of the International jury gave rise. Only the other day, one of my colleagues mentioned the extraordinary fact that Mr. Seavey, whose photographic backgrounds are celebrated all the world over, had only been adjudged a bronze medal, or—as this massive distinction is called here in derision—a medal of chocolate. Certainly, any one who has had the opportunity of listening on the spot to these complaints must have been struck by their reasonableness, and, notwithstanding the anxious attempts to stifle them, it cannot be denied that they have produced a very bad effect on that portion of the public that is in a position to judge.

M. Michaud has invented a new process of photo-engraving which has already been described in your columns: he has not even been thought worthy of a mention. M. Pellet, who has been repeatedly spoken of in the PHOTOGRAPHIC NEWS, exhibited some of the prints taken on his *papier cyanofère*: not the slightest allusion is made to his ingenious invention. M. Billon-Daguerre showed photographs taken on wood, from which the engravers could work directly on the block, without having, as heretofore, to cut only from the drawing of the artist: the jurors took no more notice of them than if they had been the boots of the gallery attendant. M. J. Vallette submitted to the notice of the jury an excellent travelling camera, very simple and portable, and meeting every requirement: he has been "hit over the head" with an honourable mention. A novel apparatus for washing films, designed by M. Conture de Rilly-la-Montagne, has, as it really deserves, met with the approval of all competent judges; but from the official jury it has received nothing but the attention of being relegated to a remote corner of the gallery where the photographic section was exhibited, and no award of any kind was conferred on it. A very skilful carver in wood, M. Boulanger, has devoted his attention to making posing furniture for photographers, and has turned out some pieces which are perfect models of taste. Imagine what to all appearance is a simple column, but which in a few seconds can be converted into a stand or a table, or a counterfeit chimney piece, or a *prie-dieu*, or an ottoman, or a bookcase, or even a piano! Some of M. Boulanger's accessories are capable of no less than sixteen transformations, and scarcely occupy the room of a small child. This manufacture as it is carried out is really an artistic one, and is almost unique of its kind: but M. Boulanger has not been thought worthy of even the shred of a prize. Notwithstanding this want of appreciation on the part of the jury, however, the accessory furniture that I have described has, as I am in a position to assure you, excited

universal admiration. I could bring forward other instances of this spirit of ostracism in which the jurors have dealt with inventors; but of what use would it be to do so? The list itself ought to be a sufficient answer to any who object to my criticism.

One inventor alone, M. Poitevin, has received a consideration commensurate with his merit. It is true he has not exhibited anything specially worthy of note, but a number of pictures taken by the various processes that he has discovered were very conspicuous in the photographic section. To him, in the capacity of *collaborateur*, was awarded the medal of honour. The bestowal of this very high distinction has been received with unanimous applause in all quarters, for it is a legitimate honour to crown a long career entirely devoted to researches in the science and art of photography. This award to M. Poitevin was a foregone conclusion; it was impossible to do otherwise than confer it on him.

I believe it will not be without interest thus to have pointed out the indifference of which inventors have been the victims. It seems to me impossible to insist enough how strongly those are deserving of reward who show at our exhibitions novel applications and valuable discoveries. We live at a time when things which meet with a certain amount of appreciation have to be highly paid for. It is quite sufficient to declare that some secret process has been discovered for obtaining specially artistic prints, to puff some new formula for extra-rapid working, to vaunt imaginary means of obtaining magnificent proofs with a very short exposure, and to call all these processes by high-sounding names, in order to realize a fortune much more quickly than by good photographic work. No consideration is given to the facts that the most valuable secrets are acquired by personal experience and daily study; that they much depend on the excellence of our apparatus and re-agents, and are paid for without knowing it. It would be more advisable to render the proper tribute of justice to the inventors and their valuable discoveries.

(To be continued.)

THE USE OF DRY PLATES IN THE STUDIO.

BY C. FERRANTI.

A PERUSAL of what has been written on this subject tends to show that absolute immunity from failure can hardly be expected for the dry-plate any more than for any other process brought to bear upon so many and constantly varying causes, too well understood to require enumeration.

That failure can be reduced to a minimum and is a point gained in favour of good dry plates, has been amply ascertained when a desire has existed to arrive at a truthful conclusion. Until by practice and experience a thorough knowledge of the best mode of working with dry plates has been acquired, it will certainly be advisable to have at hand the bath and collodion.

The yellowish green hue, the wrinkling or frilling of the film, too intense negatives, and, maybe, a few other trifling vexations, are all things to be expected at first. We may here quote the appropriate words of the good Vicar of Wakefield: "We were very bappy, not but that we sometimes had those little rubs which Providence sent us to enhance the value of its favours." Still there is this difference: the little rubs of Providence cannot very easily be averted, whereas we can more easily find remedies for our little photographic troubles.

We will endeavour to give some information on the subject of these difficulties, which ought not to dishearten, and should be well understood before confidence can exist in the mind of the dry plate worker who want to make sure of good results. The yellowish green hue may be the result of over-exposure; in such a case, thin plates of this description must be looked for; it may also happen that the developer has not been well managed; and again, the plate may have been bad. Comparative trials

tend to prove that over-exposure is oftener the fault. In the case of a ferrous oxalate developer, and where it has been used over and over again without sufficient addition of fresh stock, it may happen that it has lost its energy; in such a case, the failure suggests the remedy.

Wishing to investigate the matter thoroughly, the writer noted that somewhat thin and unsatisfactory negatives had been produced under conditions known to experienced and observant photographers to yield harder and less satisfactory negatives with the bath and collodion; subsequent experiments proved that even under the conditions of a very bright sky, with a cold east wind blowing, the sum of advantages was so greatly in favour of dry plates that excellent negatives could be produced with a remarkably short exposure.

We have advocated the use of ferrous oxalate for many reasons, of which not the least is the fact that it will not have the injurious effects which must be anticipated from the fumes of strong ammonia. Its great simplicity brings one back to the days of iron development in flat dishes, the solution being used over and over again. This simple method was afterwards abandoned, probably for the same reason as that given by those who pin their faith on the belief that by skilful pourings on and off, certain magical and artistical effects can be produced. It is not, however, our purpose to enter into questions of so delicate a nature at present; we will confine ourselves to stating that very beautiful results can be obtained by the means advocated, and that a better or simpler method could hardly be desired by the practical operator who expects the camera, aided by his chemicals, to reproduce faithfully and thoroughly the conception of his brain.

Wrinkling or Frilling of the Film.—In a former article on this subject the means of avoiding such a mishap have been given, and as it is a perfect cure it may prove useful to state more in detail that after development the negative must be slightly washed, and then allowed to remain in the alum dish from one to two minutes. Wash again, and fix thoroughly. When the plate has been cleared of every trace of mottling, it can be again washed, and must be plunged a second time in the alum bath, where it should be left for at least five minutes, and then finally well washed. A close adherence to the above instructions will prove satisfactory in every way.

Too Intense Negatives.—In most instances this defect will be due to a want of correct appreciation of intensity, or from allowing the developer to act too long on the film. A properly timed negative under favourable circumstances develops very rapidly, and requires attention. A little practice will work wonders in this case. It may prove useful to state here what has been found a practical method of working rapidly and with certainty. Three white porcelain flat dishes are required. The first, in which the developing solution is contained, should be slightly larger than the plates used; the second, in which the alum bath is kept, should be large enough to hold four plates; and the third, for hypo, should be of the same size. The water-tap should be close at hand. It will be seen at once that with the arrangement suggested, and by using for each dish a small piece of wood about six inches in length and tapered at both ends, the fingers need scarcely touch the solutions, and the necessary motion can be imparted to the plate during development. The plate can also be examined several times without danger whilst it is being developed. Every operator will know how best to suit arrangements to his own convenience.

We may have an opportunity of stating shortly our opinion on some other supposed difficulties and objections.

Correspondence.

PHOTOGRAPHY BY ARTIFICIAL LIGHT.

SIR,—I have been in the habit of perusing your NEWS, searching for crumbs of information and encouragement from the experiences of my brother artists, and in days gone by I have reaped much benefit from its pages; but

lately there has been little else to read but articles, correspondence, and advertisements relating to the artificial light mania, after the perusal of which my mind will revert to that clever satire by the late Tom Hood, in his little book entitled "From Nowhere to the North Pole," in which the reader and Master Frank, the hero of the tale, are introduced by the Fairy to "The Undernational Exhibition, or The Hall of Idle Inventions," amongst which is an elaborate scheme for "making malachite buttons from mushrooms."

An estimate is prepared, after the reader and Frank have visited the process in all its stages, showing the cost of growing the raw material, painting, veining, polishing, shanking, &c.

"But," says Frank, "if your buttons cost that, what do real malachite buttons cost?"

"Ah! That I don't know," says the inventor; "havin' no idea."

Now an estimate of the expense, and some idea of the difficulty, has been drawn up respecting the electric light—notably, by Dr. Drinkwater, F.C.S.—which amounts at least to £200, whereas daylight costs nothing*; or, taking the cheaper method of artificially illuminating the sitter (say the Luxograph patent), it will run to £40 or £50 at the least, and it will take many sitters who "cannot call again" to reimburse that outlay. Besides, it is my opinion that the said sitter, on comparing his artificial light picture with that of his friend's pictures taken by daylight, will invariably find time to call again, and have one taken by daylight, and so get a photograph of himself representing him as a living being, with all the half-tones, lines, and texture of the skin depicted, instead of an unnatural waxy skin, glassy eyes, false and reflected lights, black shadows, and the entire appearance very supernatural and corpse-like; for such are the characteristics of these artificial light pictures—at least, all that I have seen. And supposing the artificial light is eventually brought to something like perfection, I cannot see where the gain is to come in, only in the satisfaction of having mastered a scientific problem, or for enlarging purposes; for, as is well known, in dark weather it is always accompanied by rain, fog, drizzle, mist, and snow—one or the other—with an extensive accumulation of mud underfoot, and great discomfort is felt in going far away from home; so our sitters stay indoors, and I believe they would even if the light was good, in face of all these discomforts and annoyances and risk of taking cold, particularly with children, who are, as a rule, our best and prettiest subjects.

This artificial light might draw them out while the thing is new, just for a week or so, and then there is an end of it.

Then sitting for a photograph, with nine persons out of ten, is a holiday event, or when on a visit to a friend in your town, who recommends you to her visitor; or when the necessary duties of life allow you a little spare time, it comes in then as a part of the holiday recreation; and people are not in the habit of taking holiday and donning their best attire on dull, dark, rainy days, and no sane person would think of using the expensive, uncertain artificial light when the real genuine article is to be had for nothing; and if it is not to be had just when your sitters call, send them away to call again when there is daylight; then get a good result. "The best picture they ever had." Your sitters will then honour your independence and self-denial in risking the return of their patronage for the sake of your love of art and a good result. Depend upon it they will come again, and, what is more, will send their friends. Treat them the same, always pleasing them; they

* Is our correspondent prepared to supply it in unlimited quantities on these terms? If not he should not quarrel with those who try to eke out the limited supply by any adequate substitution. If he do not require such aid, he assuredly will not be tempted to purchase it; and may enjoy a happy smile at the poor wretches who are foolish enough to gain a few shillings at the outlay of a few pence.—ED.

in their turn will speak well of you, and so the ball is kept rolling.

I am sure there are plenty of photographers, judging from their work and the finish thereof, whose time would be well employed during the slack, bad season, in improving their studios, reception rooms, and plant: cleaning, painting, doing up their accessories, studying posing and lighting from works worth imitating; re-modelling their dark and printing rooms, system of doing business, registering and preserving their negatives, &c., &c., so that their next season's work shall be a great improvement on the past. This is what is needed. Perfect what you do know, aided by hints and ideas from those who excel in their productions; and last, though far from least necessary, your own brains, instead of this feverish excitement after a novelty which, in the end, in most persons' hands, if not all, will bring no profit, and, what is most important, will not improve their work; because I am certain that those who cannot take a good negative in a real artistic sense (not a mechanical or manipulatory sense) by daylight, cannot by the artificial light, which is a thousand times more difficult, and requires more artistic knowledge of light and shade by far to achieve even a bad daylight picture by its means.

Now, none of those artists who excel in the work—such as Mora, Sarony (both of New York), Slingsby (of Lincoln), Abel Lewis and Marshal Wane (of the Isle of Man), and others, have anything to say, and take no part whatever in this artificial light discussion. I think this fact speaks volumes. So let us look about us and strive after good work with the means we possess, instead of wasting time and money and space in the NEWS, hunting up inferior artificial means of doing the work when we are already possessed of the efficient natural means.

I hope I have employed the dull, long winter to good purpose, gathering ideas, &c., to be put in practical shape ere long, and setting my house in order; and to show that I am not the proverbial guide post, pointing others the way, and never going myself, I propose sending you some of my new work to inspect and criticise, if you will favour me by accepting it.—Yours very truly,

DECOR INENPTUS.

DEAR SIR,—Having read a great deal lately in your valuable pages about artificial light for photography, I thought the following account of a light used as long ago as 1856 might interest some of your readers. I had it from the *Family Herald* for October 18th, 1856, and it is as follows:—"A very brilliant light has been produced by directing a stream of oxygen gas into the flame of coal gas which had been previously passed through cotton and naphtha, in order to surcharge it with carbon. With this light, using a reflector, a photograph of an engraving was taken in a very short period." Thinking that this light somewhat resembles the oxyhydrogen light, I have sent these lines hoping they may be of practical use to some of your readers, though of none at present to yours truly, J. L. BERRY.

1, Market Street, Aberdeen.

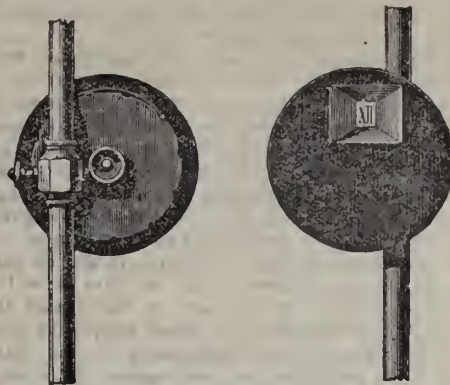
FIXING THE EYE IN PORTRAITURE.—PORTRAITS BY ARTIFICIAL LIGHT.

SIR,—It appears, from the paragraph you quote from the *Danbury News*, that the American photographers are recommended to try the clock face idea for making the sittings for one's portrait more pleasant.

It will be seen, by referring to the last PHOTOGRAPHIC NEWS ALMANAC, that I have recommended and adopted an improvement on the idea alluded to, and if you will kindly reproduce the two engravings, and let them appear with this letter, I shall be glad for the suggestion to have the benefit of the extended circulation of the NEWS.

The two sketches speak for themselves. I need only

say that the revolving aperture *compels* the eye to follow, which it is not certain to do if the sitter is merely required to look alternately at the figures on the open dial.



I ought, perhaps, to say that the little piece of apparatus was made for me by Messrs. Cussons and Co., of Southport.

Dr. Drinkwater, in his paper on the application of artificial light in photography, refers to the use of magnesium having been abandoned on account of its expense. From some experiments lately tried, I find the cost to be about 2½d. for each exposure. At the time my first experiments were made I think the cost was 1s. It will, I believe, be found on careful trial that no light equals the magnesium in cheapness and ease of application.—Yours truly,

A. BROTHERS.

THE USE OF GELATINE DRY PLATES IN THE STUDIO.

DEAR SIR,—As the use of dry plates in the studio is rapidly growing in importance, I beg to add a little of my own experience to the many useful hints that have appeared in the NEWS the last few weeks; but lest it should be supposed I am making a claim for priority of use, I will at once state such is not my intention.

I totally abandoned the silver bath for all studio work in September last, and the ferrous-oxalate has since occupied its place. I have tried commercially prepared plates, but since September I have made my own. It is not my intention to say anything of the process beyond stating that ample instructions have appeared in the NEWS. The process of Mr. Bennett I have tried, and can recommend it to any, wishing to make their own plates, as excellent.

I now come to the object for which I write, namely, the method of development I have used in preference to all others since November last. I lay no claim to its origin, the formula having appeared in the NEWS, but may have escaped notice. It has the following advantages over the ordinary oxalate bath: namely, you can make a stock solution that will keep for a month or more; it develops quicker; and after the iron is added, it will keep in good developing action for three or four days—in fact, I have used it at the end of a week after standing all the time in the dipping bath. I hope some dry plate worker will give it a trial. I append the formula:—

To twelve ounces of boiling water, and three ounces of salts of tartar (to this while hot), add oxalic acid until effervescence ceases; if found too acid, add a little more salts of tartar until about neutral; this is stock solution which will keep. To make the developer, add to each ounce of the above twenty grains of proto-sulphate of iron.—Yours truly,

J. R. CLARKE.

Thirsk.

AN UNTRUSTWORTHY OPERATOR.

DEAR SIR,—Under the above heading, in last week's PHOTOGRAPHIC NEWS, you insert a letter from a correspondent giving his experience of photographers' assistants

during a period of over twenty years. In that time he has had, to quote his own words, "occasion to employ quite twenty assistants at various times. All (save one) turned out either *ungrateful* or dishonest." He then relates his last experience—a serious case of theft. This you consider "all operators are concerned in discovering, if possible, and certainly disowning."

Thus called on, I would ask by what right we should be called upon to disown a thief? Are operators regarded as being of such doubtful character, that whenever a case of theft occurs, they are all to be called up to disown the act, under pain of being considered as sympathising with the thief? If an employer is guilty of wrong to an assistant, are all employers also to be called upon to disown it? And will they look upon such as do not as having a fellow feeling with the culprit?

Your correspondent is certainly to be pitied for his twenty-two years' experience. There are houses that have retained their assistants as many years as he has had assistants in his twenty-two, and there are many who can point to three years and upwards of honourable employment in a single situation.

The inference conveyed by your correspondent's letter, and your own (it is to be hoped) unwitting support of such inference, is, I am convinced, not justified by the facts—theft being no more a characteristic of photographers' assistants than it is of any other class of the community. There is, therefore, no reason why they should be held up as specially responsible for the discovery or the disowning of this or any other particular thief that may turn up among photographers.

A. STACY WATSON.

[Our correspondent "doth protest too much!" As the special community in which the culprit moves, and amongst whom he claims fraternity, operators are especially called upon to "discover" or "disown" the black sheep. Especially called upon, not because that is necessary to disclaim their sympathy with crime, but because they have special opportunities of noting the tendencies and conduct of their fellows. Very especially called upon, because it has long been subject for regret that the status of photographers—especially working photographers—is not so high as it ought to be in relation to the workers in an art industry demanding exceptionally high intelligence and culture. The communication to which our correspondent refers is a pendant to one which appeared in our issue for Feb. 28th, which, although originally appearing in an American journal, details the experience in a first-class English studio which we know very well. Our correspondent does well to maintain the dignity of his order; but it is wise to remember that this is not best effected by over-sensitiveness and readiness to challenge affront where none can be intended. The PHOTOGRAPHIC NEWS has always held the position of the especial organ of professional photographers and operators, and has been proud of that position. It is the least likely in the world to undervalue the practical photographer, whatever position he may hold.—ED.]

HOW TO BUILD A CHEAP AND EFFICIENT STUDIO.

"Be warned in time by others' harm,
And you shall do full well."—*Ingoldsby.*

DEAR SIR,—A very excellent article under the above heading appeared in the YEAR-BOOK for 1879. The writer has with great clearness set forth the cost, measurement, &c., of a studio, and I have no doubt, from my own practical knowledge of the subject, that if the instructions are carefully followed, the result would be satisfactory. As the spring, however, is the time most amateur builders would think about commencing operations, a word or two of caution may not now be out of place.

If more than a certain number of feet from any house

or other building, or in the extreme suburbs, possibly such a structure as Mr. Parr describes might be erected with impunity. If in or near any town, however, I would recommend anyone about to build, first to enquire of the district surveyor if such a structure would be allowed, otherwise he may any time within (I think) six months of its erection be served with a notice to commence pulling it down within forty-eight hours, be summoned to the nearest police court, and fined £20 for having commenced building without first giving notice to the district surveyor of his intention. He will then—if he wishes the building to remain—have to petition the Metropolitan Board of Works, accompanying his communication with proper plans of what alterations he proposes in order to bring the building into conformity with the Act; may be kept in suspense two or three months, and then find that by spending about twice as much as the studio cost him, in iron, to strengthen the work and cover the unglazed portion of it, and paying the surveyor's fee, the Board will allow him to amuse himself in peace.—Yours truly,

F. A. BRIDGE.

Norfolk Road, Dalston.

[We may add a word or two to the excellent advice given by Mr. Bridge. His experience doubtless refers to the Metropolitan Building Act, a very stringent statute, but, of course, prevailing only over a given district. But the intending builder should follow the advice above given to ascertain, first of all, if a district surveyor exist, and then with what Act the building must comply. The general purport of the Metropolitan Act is to insist that the walls shall be of brick and stone of a given thickness in all parts that are not sashes and doors. In many cases it will be found convenient to build the studio all sashes and doors, and it will in some cases be found permissible. We once had a greenhouse built, the builder assuring us that he was complying with the Act. We should not have trusted him, for when completed we had a visit from the district surveyor, with an intimation that the building was not in accordance with the Act, and must come down. Fortunately we discovered that he was a good-natured and sympathetic man, and certain hints were obtained that if the boarded portion were covered with light sashes, the letter of the Act would be complied with. Our greenhouse became all sashes and doors, and passed the inspection.—ED.]

KEEPING SENSITIVE PAPER.

DEAR SIR,—In your interesting leader of the 7th instant, headed "Preserving Sensitive Paper—an Efficient Method," you say: "The early method of using a chloride of calcium case seems to have passed quite out of use. Here the preservative agency appeared to have been an atmosphere of chlorine which slowly converted the free nitrate into chloride of silver."

Agreeing with you in the observation that sensitive paper so preserved "prints slowly, and the image lacks vigour." I am inclined to attribute this defect rather to the too highly desiccated condition of the paper, than to the actual destruction of the free nitrate by chlorine, for I observed the self-same result when using my desiccating box charged with quick-lime (see *Photographic Journal*, March 1861, which could not by any possibility have destroyed the free nitrate in sensitive papers preserved in this manner, but only, by absorbing every trace of hygroscopic water, have interfered with the printing quality of such films. I found, indeed, that it was beneficial to take out the sheets a few at a time, and allow them again to absorb a certain amount of atmospheric moisture before placing them in the printing frame. This expedient enabled me to get over the difficulty to which you refer.

Commercial chloride of calcium usually contains an excess of lime rather than of free acid, and only in the latter case could any chlorine (or hydrochloric acid) be supposed to escape from the dry salt into the atmosphere of the box or

desiccating chamber. I believe the want of vigour arises solely from the excessive dryness of the sensitive surface.—
I am, yours, &c., JOHN SPILLER.

[Another highly esteemed chemical correspondent suggested that no decomposition of the chloride of calcium should take place, and with no free chlorine present the free nitrate could not be converted into chloride of silver. Our experience with this mode of keeping sensitive paper has been limited; but in the one case with which we are familiar we found a strong smell of free chlorine, and the paper presented the characters of chloride of silver without free nitrate. It is manifest our experience had been exceptional.—Ed.]

Proceedings of Societies.

GLASGOW PHOTOGRAPHIC ASSOCIATION.

A "Popular Evening" devoted to the members and friends of this Society was held in the large hall of the Religious Institution Rooms, 172, Buchanan Street, on Thursday, the 13th inst., where there was a crowded attendance to hear a lecture and witness the exhibition by oxyhydrogen lime light of fifty photographs taken by the lecturer, Mr. James McGhie, illustrating a tour he made to Paris and the Universal Exposition, 1878.

In the absence of the President, on the motion of Mr. G. Mason, Mr. Urie was called to the chair.

The CHAIRMAN said the programme of the evening's entertainment was a lecture and exhibition of lantern transparencies illustrating a trip to Paris. The photographs were taken by Mr. J. McGhie on sensitive gelatino-bromide emulsion plates. They were exposed from Mr. McGhie's own point of view, and not for mere pictorial effect, but were the actual transcripts of the buildings and squares visited. They would give the members, perhaps, a better idea of the city than if they were actually on the spot, amid the bustle of beautiful Paris. The Chairman continued "It is encouraging to see such a large audience attending one of our popular evenings. I think it a practical demonstration in their favour, and hope by next session to see two or three similar gatherings, which, by bringing members and friends together for mutual enjoyment, will foster the harmony of the Society in no small degree. From what I know of Mr. McGhie's artistic and scientific attainments and literary ability, I feel safe in predicting an entertaining and instructive evening. From the number of slides I presume the lecture will be somewhat long. I will not encroach further on your time, but have now great pleasure in introducing Mr. McGhie, who, although the youngest, is at the same time the most talented of our members."

Mr. McGHIE at once proceeded with his series of views, of which he gave graphic and interesting descriptions, which were received with evident appreciation by the audience.

The CHAIRMAN, in proposing a vote of thanks to Mr. McGhie, regretted that a few of the slides at the beginning had suffered somewhat by being shown out of focus, while the slight disarrangement of views had occasionally placed the lecturer at a disadvantage in his descriptions, which were elegantly composed and well delivered. The photographs he thought most admirable, bringing the buildings, squares, and monuments, &c., of *la belle France* almost in reality before them. He advised all members to follow the example set by Mr. McGhie, and bring their results before the Society; for such exhibitions, he believed, gave great pleasure, and did no little amount of good. Mr. McGhie had evidently put himself to great inconvenience and trouble in getting up the slides and lecture, and the Society ought, indeed, to feel proud of having such a useful and energetic member on its roll. He had no doubt the meeting would award the lecturer a hearty vote of thanks for having thus volunteered his services for the evening's instructive entertainment.

Mr. GILFILLAN, in seconding the vote of thanks, considered the lecture excellent in every respect, displaying in Mr. McGhie evident talent both as a photographer and a lecturer, and putting before members a fitting example which they should all strive to imitate. Such perfection and excellence, he would remind them, was only to be had by hard work. Young as he was, Mr. McGhie was already recognised as a reliable authority in almost everything photographic, and if young men wished to gain the confidence and esteem of their employers, and do a little in carrying forward the triumphs of the beautiful art-science with which they were all connected, they could not do better than emulate Mr. McGhie's example.

Mr. ROBERTSON (Hon. Secretary), in proposing a vote of thanks to Mr. Urie for the able manner in which he had fulfilled the duties of the chair, begged to coincide with everything that had already been said regarding the lecture and lecturer. He had derived a great deal of pleasure in witnessing Mr. McGhie's exhibition, the views shown bringing vividly to his recollection the beautiful sights of Paris, which he had already personally visited several times. The points of view taken by Mr. McGhie he thought really excellent, many of the monuments and buildings being thereby seemingly enhanced in beauty. The pictures in some cases seemed almost the reality, and we seemed to feel the effects of the delightful atmosphere, and he meeting the charming people of that beautiful city which no one should fail visiting. He hoped Mr. McGhie would at some future meeting give the members a full description of the process by which he had obtained such gratifying results, and which seemed to fulfil all that even the most fastidious photographer could desire. The plates, he believed, were prepared in Scotland, and being exposed in France, and developed—some of them probably months afterwards—in Scotland, seemed to him to betoken their excellence, whilst it did great credit to the manipulative skill of Mr. McGhie, who was bound to rise high in his profession, and for whom he would augur a successful future. His perseverance he would seek to commend. His artistic ability and chemical skill enabled him to put all he undertook to the best possible advantage. The proceedings then terminated.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The usual monthly meeting of the Society took place at the Memorial Hall, Albert Square, 13th instant. Mr. CHARLES ADIN (President) in the chair.

The minutes of a previous meeting were read and confirmed, and Mr. Charles Harris was duly elected a member of the Society.

The SECRETARY called attention to one very important matter in connection with the Society—that of members paying their subscriptions now in arrears. Some members (he said) came very regularly, and enjoyed their tea, and took part in the proceedings, but quite forgot to pay their subscriptions, even though they had not done so for two years or more.

The CHAIRMAN then read the business card of a Manchester photographer, and sympathised with those professional gentlemen present, seeing the very strong competition they were to endure. The card read as follows:—

"Mr. —, professor of singing and music, miniature painter, phrenologist, taxidermist, mesmerist, and photographer, Manchester.

"Mr. — respectfully announces to the inhabitants of Harpurhey and neighbourhood, that he has erected a first-class studio, for the production of the best styles in every branch of the art of photography. Mr. — calls special attention to his new Opalotype portraits, which, for beauty and delicacy of detail, are equal to ivory miniatures. Wedding and other groups taken at parties private residences. Horses, dogs, and other favourites photographed. Cartes-de-visite from 5s. per dozen copied to life-size. Old faded Daguerreotype portraits renovated and restored to their original beauty—having had upwards of thirty years' experience as an artist. The state of the weather is of no importance. Family residences, machinery, &c., photographed on the shortest notice. Families photographed at their own residences, without extra charge. A portrait club, which enables every one to obtain a correct portrait, coloured in oil, in gilt frame complete, and a dozen cartes-de-visite for the low sum of £1 10s., payable at 1s. per week.

"Busses from — run every five minutes, and alight passengers at the door. Evening parties attended for mosmoric entertainments. Characters correctly delineated. P.S.—Birds and animals preserved and stuffed on the most approved and scientific principles. Lessons in singing, with pianoforte accompaniment. Picture frames of every description made to order.

"A respectable young lady or youth wanted, as an apprentice: premium required, nevertheless.

"Mr. — wishes to correspond with a young or middle aged lady, must be fond children and music, with a view to matrimony. A widow lady with children not objected. He is 40 years of age, tolerably good looking, likes a glass of beer, and has a particular wish to live 36 years longer, then go home and see his mother, where he will sing

"God save the Queen and
John Brown, the piper."

Photography by artificial light was the next subject before the meeting.

Mr. BROTHERS had brought a very simple hand-lamp (or reflector) in which magnesium wire was burned, and Mr. Harrison-

Garside had arranged in the adjoining room the Moule's lamp, and a new chimney he had made for it.

After some discussion, and explanations from Mr. Brothers on the magnesium apparatus, a plate was exposed upon the President by Mr. Schofield and also by the Secretary, the illuminating being conducted by Mr. Brothers. The members then retired to the adjoining room, where they had an opportunity of seeing the Moule lamp in operation, and two plates were exposed by the light, the results to be communicated at the next meeting.

Mr. Schofield exhibited a large gas burner by Mr. Sugg, of London. This, owing to a half-inch gas pipe being required, was unable to be tried at the meeting; but at the invitation of Mr. Schofield a few members afterwards inspected its capabilities, which were, for ordinary gas, really astonishing.

A vote of thanks was passed to Mr. Brothers, Mr. Garside, and other gentlemen, and the meeting terminated.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The next meeting of this Society will take place on Tuesday next, April 1st, at the Gallery, Pall Mall East, when the adjourned discussion on Mr. C. Bennett's paper, "On the Gelatine Emulsion Process," will be resumed; some samples of cotton, &c., for making pyroxyline will be exhibited; and Col. Wootley will show some pyroxyline washed in ammonia.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The next meeting of this Society will take place on Thursday next, April 3rd, at eight o'clock, in the rooms of the Society of Arts, Adelphi, when Mr. T. Archibald Clarke will read a paper on "Artificial Light." Mr. A. Brittlebank will also read one on "How to Take a Negative by Artificial Light for 1½d."

HEIGHWAY'S PRACTICAL PORTRAIT PHOTOGRAPHY.—This excellent little manual has recently received a very decided, although peculiar, compliment in America, where it is charged, in the *Philadelphia Photographer*, with having copied "language, chemistry, and errors," an American manual. No one who is familiar with Mr. Heighway's fluent and pleasant style of writing, as found in our pages, would dream that he could find it necessary to copy the language of another man; and as for the matter in a manual of photography, it is as much common property as the multiplication table, and must as inevitably be used over and over again as are the letters of the alphabet. But the charge of copying is manifestly a high compliment. It practically says: "This is good: good enough to be our own!" Mr. Heighway, of course, indignantly denies that there is a shadow of foundation for the charge. But having lived in America, he is manifestly hurt that such a charge should be made by some whom he has known, and who have known him.

MR. J. T. TAYLOR.—Mr. Fitzgibbon, Editor of the *St. Louis Practical Photographer*, speaks of meeting Mr. Taylor in New York, and is much pleased with his open free manner; but he does not think hopefully of the business project. He says:—"We understand he comes to New York as manager of A. and G. Taylor (by their card) Photographers to the Queen and the Prince and Princess of Wales, 763 Broadway, N. Y.; 814 Arch Street, Philadelphia, and 535 Washington Street, Boston. The sign is very attractive on Broadway, but it won't take in this country. The firm proposes to make a specialty of large head work, 8 by 10, 10 by 12, and 11 by 14, finished in water colours, neatly framed, and sold at reasonable rates. We are afraid they will find this style, and almost every other coloured cheap picture, have already had their day in this country. If they are successful—which we sincerely hope they may be—we shall be surprised and astonished. They have fitted up very fine rooms in New York, and gone to considerable expense, not only there, but at their branches in Boston, Philadelphia, and Chicago. They brought over some seventeen assistants, who are up in their style of work and the way they do business. We hope our brethren will give them a cordial welcome."

To Correspondents.

JOHN LEWIS.—We have frequently advised in relation to gold recovered from residues of toning baths. Throw down with sulphate of iron, wash black deposit with dilute sulphuric acid to remove traces of iron, rinse well, and dissolve by means of aqua regia, neutralize, and use.

AN OLD PHOTOGRAPHER.—We cannot state with certainty the precise date at which Mr. Beard, or anyone else, first produced Daguerreotype portraits in London. Can any of our readers supply the information? It was, we believe, in the year 1840.

G. D. MACDOUGALD.—Our correspondent asks a question identical with many we receive at present; to which, however, we cannot give an answer which will be deemed satisfactory by the querists. The enquiry is for the best formula for the gelatine emulsion process. We have published all that has been made known on the process, but we cannot decide what is best. Nor can we repeat or epitomize processes which we have already given in full. Our last volume has many articles on the subject. Take the process as described on the second page of that volume, where it is clearly, fully, and simply described.

GEORGE WEBBER, JUN.—We cannot tell you where to procure flock paper of a specific tint; but we imagine that it may easily be found by a little search amongst the shops of paper-hangers. We have seen such tints in the shops of high-class paper-hangers.

CITRIC ACID.—A correspondent, who signs no name, complains that he has accidentally put citric acid into his negative bath, and wishes to know how to remove it. Let him add an alkali, caustic potash by choice, or ammonia, until no more precipitate falls; carefully filter, and then expose his solution to sunlight for a time, and then try it. If it still work unsatisfactorily, use it for printing.

A. MILLER.—For the relation between the various stops of any special lens or series of lenses, you should enquire of the maker. The special information you require, you will find in two articles on "Stops," by Mr. Dallmeyer, in our *YEAR-BOOKS* for 1876 and 1877.

SOUTH DEVON.—The surface of the picture should be next the polished surface of the press.

THE LUXOGRAPH.—Messrs. Alder and Clarke write to correct inaccuracies in Dr. Drinkwater's paper on artificial light. They especially complain of the statement that the Luxograph is the invention of Mr. Lombardi. They are probably aware that statements to that effect have appeared in the daily press; but the true facts of the case have so definitely appeared in our pages, that there is little danger of misapprehension. Letters reaching us on the day on which we go to press cannot receive attention the same week.

K. H. C. O₃.—You may safely adopt the plan you propose, or throw down with carbonate of soda, and redissolve with nitric acid; or boil down, crystallize, wash, and recrystallize. Or if you doubt, send to a refiner.

LUX.—There are no definite rules for the valuation of photographic businesses. None can be laid down for the valuation of negatives, so much depends on the character of the connection. A general rule with indefinite businesses is based on income. Two or three years' value of net profits sometimes forms the basis of a valuation. We have known a business similar to that you describe offered for £500, and thought it exceedingly moderate. We have been called upon several times to assist professionally in valuations, and have always done so with fresh reluctance, the basis of such valuation being so uncertain. We cannot, in these columns, advise on commercial questions.

FRANK DORE.—The method is given in the gentleman's own words. There is no necessary error. The reactions are very similar to those you describe.

G. L. HOWIE.—We will write to you shortly.

R. G. writes to confirm our remarks in a recent leader on keeping sensitive paper. He finds the carbonate of soda soaked paper answer satisfactorily. Thanks.

AMATEUR.—Yes; the precipitate will fall to the bottom, and the clear liquid may be decanted off; or you may remove the deposit, which is citrate of silver, by filtration.

LITTLE PHOTO.—We are glad to learn that it was not our old correspondent who was in such bad case. It was wrong and foolish of another person to assume a *nom de plume* which was already appropriated. We agree with your general remarks.

A. A. C.—The part played by nitrate of uranium in dry plates is not well understood. 2. Either brown or slate colour will do for a plain background, one as well as the other. Whether you can dye a large piece of calico with Judson's dyes, or not, we cannot tell. Try a small piece first. We fancy that weak coffee would give you a good brown.

W. HALL.—It is fairly within the competence of anyone to refrain from using novelties, but is scarcely fair to revile those who are enterprising enough to experiment. It is to such men that photography owes its present position, or even its existence, and many professional photographers their means of living. We cannot give you facility for charging many of the best men connected with the art with being "gullible." Our space is too valuable for mere invective.

VINCENT HATCH, R. V. HARNAN, and WILLIAM GREEN in our next.

Several correspondents in our next.

The Photographic News, April 4, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHIC TRANSPARENCIES UPON THE SCREEN—THE HELIOSTAT AS AN IMPLEMENT OF WARFARE.

Photographic Transparencies upon the Screen.—We are glad to see that Mr. J. Thomson has made some further use of his photographs of Cyprus, beyond putting them into a book. No doubt his recently-published volume, *Through Cyprus with the Camera*, amply fulfils its design, and gives the peruser thereof a far more realistic idea of the newly-acquired British possession than any number of closely-written pages. The plates, as one passes from one to another, put the characteristics of the island vividly before you, and it is only necessary to turn the page in order to flit pleasantly from place to place. A street in Larnaca is followed by the fir-clad slopes of Mount Olympus, while groups of natives shows the costume of the islanders has scarcely changed for centuries. What may be termed Old Cyprus and New Cyprus are depicted by one picture of an antique mosque crumbling to ruin, and by another in which some Royal Engineers in smart uniforms are carrying on the work of surveying, &c. Mr. Thomson's prints, therefore, are admirably suited for the illustration of a book on Cyprus intended to bring us face to face with that island; but they convey a better idea still of reality when employed as transparencies, and thrown upon a huge screen by the aid of a powerful lamp. It is surprising how much there is in a photograph when viewed in this manner. Microscopic details which the eye fails to perceive, or at any rate to regard with any importance, are brought out in a most striking fashion, and, indeed, the original scene is reproduced as truthfully as it is possible by photography. And how nearly to nature scenes can be rendered, only those who have seen good photographs shown in this way know. We remember some years ago seeing a little stereo picture by William England thrown upon the huge screen in the Polytechnic. It was a photograph of the square at Rouen, in the centre of which was a statue of Joan of Arc. We are not quite sure of the dimensions of the Polytechnic screen, but it is probably forty or fifty feet high, and the photograph in question was made to cover the greater part of it. So sharp and distinct was the square, and so thoroughly illuminated, we remember, that the actual spot seemed before one's eyes. We can well imagine, therefore, that Mr. Thomson's Cyprus photographs, which were recently employed in a lecture on the Island and its People, by that gentleman, given in aid of Dreadnought Hospital, conveyed a more vivid impression to stay-at-homes than any other means could give them. There is nothing more delightful, indeed, than sitting down comfortably, and watching scene after scene of this kind put before you. And yet we in this country have made little use of photographs enlarged and exhibited in this fashion, except, perhaps, in a semi-private manner. Now in Paris such things are far more appreciated. For some years the Abbé Moigno organised public lectures or entertainments in Paris at the *Salles de Progres*, in which camera pictures were much utilised. He superseded in a measure the employment of a microscope, which is always difficult to use in classes or large assemblies, even when one has to do with people who are not entirely ignorant of the instrument. The use of costly diagrams was also obviated, for photographs of small objects could be enlarged to any extent. You still had the real thing before you instead of an exaggerated drawing of it. When the Paris Photographic Society holds its annual exhibition, good use again is made of transparencies of a photographic nature in this way. On payment of a franc are secured not only the right of entrée to the exhibition, but twice a day there was a display of photographs upon a screen by the help of the oxy-hydrogen lamp. We passed a very pleasant half hour on one of these occasions, and were startled at the effect produced by some of Léon and Levy's clever instantaneous views. A picture of

a three-decker being towed into Brest harbour was marvellous. To be looking out at sea at the end of the Jetty watching the waves breaking, and almost feeling the rough wind against one's face, as the majestic man-of-war comes slowly on, with yards taut and pennant streaming, and to see this all the time you are comfortably ensconced in a warm room, upon softly cushioned seats, is no small enjoyment. A stereoscope is very well, but one cannot deny that after a dozen slides the bridge of the nose and one's forehead begin to ache. In the matter of the screen, however, if the pictures are skilfully thrown, the entertainment is one of unmixed delight. A glacier which, under ordinary circumstances, would, at the least, cost £10 and a week of travel to view, may here be seen without the trouble of turning one's head. The pinnacles of ice, the snowy crystals, the soft undulating fields of white extending in every direction, are at our feet, and in the foreground are the steep rocky moraine and huge pillars of translucent matter that is melting away under our eyes. Another transparency shows us a tearing waterfall, the splashing foam falling among the black fir trees on either side, and sending up a column of white mist and vapour, that you almost feel bedewing your face. The next picture is a well-known inn in Chamounix, the big overgrown diligence that goes to Geneva standing under the long wooden balcony in front of the house, while the landlord and half a dozen picturesque guides are posed at the entrance; above, almost overhanging the houses, is the Montauvert, the Mer de Glace, and other rather hackneyed resorts. As we said before, those who have not seen good photographs skilfully thrown upon a screen in this fashion, know not how charming and artistic they really appear, and it is a pity that this form of entertainment is not more frequently to be met with in this country.

The Heliostat as an Implement of Warfare.—The heliostat has become an implement of war. Photographers and astronomers are henceforth not alone to monopolise the moving mirror, for generals in the field are to be supplied with the instrument for signalling purposes. The heliostat, as our readers know, is a mirror furnished with a clock-work arrangement which permits the reflecting surface, so to speak, to follow the sun. In this way, one station can steadily reflect a ray to another the whole day long, or, at any rate, as long as the sun is visible. All that is necessary is to observe this ray at times, and the appearance and disappearance of the bright spot furnish a means of signalling to a distance. At night time, either a colza-lamp of exceptional brightness is employed, or else a mixture of powdered magnesium and resin—artificial light; photographers, please note!—which is puffed into a spirit flame. The spirit flame is naturally enough invisible at a distance of some miles, but the vivid brightness momentarily produced by the magnesium and resin does not fail to make itself seen for many miles. Signals are exchanged in this way, in the same manner as with the heliostat, but of course the ray from the latter is more intense. With properly adjusted stations, sun signals can be seen, without difficulty, at a distance of twenty miles and more. Up the Khyber Pass to Jelladabad the signalling just now is mostly done by the heliostat, and half a dozen of these valuable instruments have been recently despatched to the Cape. It is one of the most ingenious systems of signalling devised, but, obviously, sunshine is necessary for working it.

Correspondence.

EMULSION PLATES IN THE STUDIO.

DEAR SIR,—I have been much amused, lately, at the importance some writers in the News seem to attach to priority in putting aside our old friend the silver bath in favour of dry plates for studio work, and the eagerness with which they claim for themselves the honour of having been the first to do so. Now, if this is really an important point,

I must score in advance of those claims I have seen published, as, so far as I can learn, from any information I have been able to obtain, I was the first to abandon the silver bath.

I began using Swan's plates in April last year, and since the first week in June I have used them exclusively for both portraits in the studio and outside groups and views, with the exception of one or two short intervals, when, owing to the enormous demand, I could not obtain sufficient supplies, and was most unwillingly obliged to employ the wet collodion process.

Even for enlargements up to 18 by 15 (I seldom do larger than this at home) I have given up the bath, and use emulsion, notwithstanding the fact that I have gallons of collodion and bath still on hand, as I can obtain results far superior to what I did with the old process after nineteen years' practice.

I believe I was also the first to cure blisters and frilling by the use of *alum*. I handed my method of using it to Mr. Swan, who was so much pleased that he printed it *verbatim* on an extra slip of paper, and for some months it was enclosed with the instructions in each packet of plates, until, owing to an improvement in the preparation of the plates, the precaution was considered unnecessary. Mr. Ferranti quotes the method in his article last week. I may state that I always employ the ferrous oxalate developer.

Your correspondent "Gratefully," in last week's issue, may find it useful to know that a very fruitful cause of blisters and frilling, is using the hypo fixing bath *too strong*. It must not be stronger than four ounces to the pint; and I use it much weaker than this.

I find it a safe rule to weaken the solution, if the plate does not appear *smooth* for a moment before greasy lines come over it, after having been plunged five times into the fixing bath; this alone, or in conjunction with the alum treatment, I feel sure will put an end to his troubles.—I remain, yours truly,

WILLIAM GREEN.

Berwick on Tweed, 20th March.

[The question of priority in using is, as our correspondent suggests, not of much importance. The date mentioned is about the same time that Mr. Ferranti commenced using gelatine plates in the studio. A card before us, dated 1868, announces "night photography" at the studio of Mr. J. H. Fitzgibbon, in St. Louis.—Ed.]

ARTIFICIAL LIGHTING, AND MR. HARMAN'S CITY MAN.

SIR,—Relative to Mr. Harman's brief pointed allusions tending to pervert the tenor and meaning of my remarks on the all-absorbing subject of artificial lighting as applied directly to portraiture, possibly, I may not have been sufficiently explicit. From Mr. Harman's standpoint all looks well enough, but from mine the aspect is somewhat different. There are two sides to most things, and, unfortunately for the lovers of artificial lighting, the human face is no exception. Artificial lighting and Mr. Harman's remarks thereon apply well to the "trade" branch of the profession, likewise for enlarging and copying when occasion requires. It may also be serviceable as an aid to dark daylight operating (to use an apparently Hibernian expression). I have nothing whatever to say against it; on the contrary, I am greatly in favour of it, decently and judiciously applied. All I would wish to avoid is this detestable "night business" into which there would seem to be a tendency to drift. In establishing such, we should be doing what drapers' and others "early closing" trade associations are doing their utmost to suppress.

Even granting artificial light equals the sun's light in quality (which, to my mind, appears about as impossible as photographing in natural colours), why should we thus force the public to patronize us at night, when, if there was

no such institution, people wishing to be photographed would find or make time to sit as they do now?

I would like Mr. Harman, or anyone else, to show clearly how, or by what means, photographers (more especially those doing a respectable high-class business) will benefit themselves and the public generally by the introduction of such a system. I confess I fail to see one single advantage. I see many disadvantages; not among the least of them, we should be at much greater expense, we should turn out inferior work at higher prices, and we should have no chance of breathing the fresh air, which I hold is most requisite and necessary in such a business as ours.

I do not see why we should expect to have any more sitters (after the novelty rush had subsided), and, in my opinion, the class of people who would most generally patronize night studios are such as would do the first-class photographer no credit, nor tend to raise him in his own or the public's estimation.

Artificial lighting in its present state for high class and art portraiture (to which my "objections" apply) can find favour with very few of our best photographers. The reasons surely are obvious; nevertheless, I will briefly sum them up as follows, omitting altogether the "sentimental" (on which in my previous letter, perhaps, I dwelt too strongly, at any rate, for Mr. Harman's taste).

1. It does not give round soft brilliant pictures equal to daylight.
2. It does not tend to improve the expression or steady the nervous.
3. It compels you to advance your prices and increase your expenses.
4. It compels you to employ more hands at higher wages.
5. It compels you to be there to look after them and the "machinery."
6. It compels you to turn out two distinct classes of work.

I say nothing against "night studios" as *separate* institutions, and *altogether apart* from our ordinary respectable daylight businesses (just as the photographic booths at a fair, for in much the same light should I regard them), but I do think it would be a very serious mistake for photographers generally to tack on a night studio to their present legitimate work; in fact, they cannot see their way to do so whose aim it is to turn out first-class work regardless of the silly whims of certain sitters (only too well known to most of us) who "really can't come again."

It may be argued, relative to the "restless subjects" (obvious reasons No. 2), that the brevity of exposure counteracts all difficulty as regards their "moving" or looking like "wild cats;" but I say not so; a sitter possessed of an inclination to move can do a great deal of "work" in ten seconds—at least, I have found it so under the most favourable daylight conditions. I contend that a rapid dry plate on the dulllest day in winter would have more chance in securing a generally successful picture of such subjects.

Among these latter I class Mr. Harman's "City Man." City men in general, if they take my advice, will do well to avoid the "blue fire" of a night studio—the extremely irritable gentleman (so graphically described by Mr. Harman) in particular, if he really is anxious to appear to the best advantage on his devoted partner's birthday. "Blue fire" on the distant stage of a theatre, and a "stroll by moonlight" enjoyed at a still great distance from the source of illumination, are slightly different things, in my humble opinion, to having a flare-up of Chinese fireworks going on almost under your very nose when sitting for a portrait.

Are such conditions, may I ask, favourable to the securing of a satisfactory likeness—even of the "City Man" class of which Mr. Harman has made (as he thinks) so ad-

mirable an example? Moreover, whilst viewing pantomimic blue lights at a theatre, or gazing on the face of his (or some other fellow's) "beloved" by moonlight, our City gent. is permitted to make the ugliest and most outrageous faces he pleases; but under photographic fire, as above described, the conditions are different, and he is expected to look calm and collected; and immediately preceding the firing of the powder he is earnestly entreated to "look pleasant" and "keep quite still."

Referring to the sentence, "Photographers have enough to do," &c., Mr. Harman again ingeniously endeavours to pervert the true meaning of my text. Does Mr. Harman seriously think I was alluding to the past four months? If so, he must deem me either a miraculously lucky photographer, or a true born idiot.

It would indeed be a treat to hear of (much more to see) a photographer who has been busy during this past painfully depressing period; but we must not forget the future, whilst dwelling so greatly on the past and present, and to which (in contrast to Mr. Harman's remarks on this point) I would direct his attention.

What about the four months from July to October, and would Mr. Harman then consider his night business a desirable accessory? Would he (after a hard day's work, which, at that season of the year, all good photographers are supposed to enjoy) like to turn into his "night shop," and work away till goodness knows what time? I should say his night *shirt* would (or should) prove the stronger attraction of the two, or Mr. Harman possessess a sturdier constitution than most of us. For Mr. Harman, and all advocates of the night work system, must remember they cannot open and shut up shop at pleasure to suit their own fancy and convenience. A night business once set going must be continued without cessation throughout the year, or it will prove worse than a failure; and the question is, will it pay in the long run, even second and third rate photographers? I think not. Doubtless there will be a "rush" just at first, while the novelty is on, but when that has subsided the discriminating public will not be slow to appreciate the fact that a dull day is better than a light night on which to have their "phizzogs" most advantageously portrayed.

I would wish it to be distinctly understood that I regret the introduction of artificial lighting, as directly applied to portraiture, *only so far as this night work* is concerned, and by its possibly general adoption all might have to "follow suit," when there is no necessity for such an innovation. I regard it as a good "hit" for those specially concerned and interested in the manufacture of these interesting instruments (the variation in the cost of which is rather amusing, not to say significant), and, as I before said, used judiciously—not abused—they should prove in the hands of the skilled photographer a great boon; but I must most certainly take exception to Mr. Harman's theory of revenging ourselves on the past exceptionally bad weather and general trade depression (the effects of which, as a matter of course, we have all felt) in the manner he sets forth.

In London, and other large cities, we know, there is a call for something "catching" (if I may be allowed the term). When "uncertain" sitters come, they must be taken somehow, and so, of course, they should be; but even in such cases I consider the general advantages are on the side of rapid dry plates in a dull light. But in smaller towns, such "slips" are not to be so feared, and by giving your visitors an appointment card to fill up and take with them, you are pretty certain to secure their return on a more favourable occasion; or, if you have any reason to doubt them, secure a deposit by showing them a "positive." You will find that a *positive* remedy for this complaint. There are more ways than one of doing business and hooking a customer, and any way is better than by turning out inferior work, though, by reason of the sensa-

tional character of its "machinery," the "artist" may derive benefit for a season.

I could say much more, so strongly do I feel on the subject to which my remarks directly point; but I forbear to trespass further on your indulgence and valuable space.

—Faithfully yours,

VINCENT HATCH,

Huddersfield, March 25th.

ARTIFICIAL LIGHTING.

SIR,—I have no wish to be drawn into a controversy on the subject of artificial lighting, but, as "Operator's" letter in your last issue provokes a reply, I will trespass on your valuable space as little as possible.

I think your own remarks in last week's article are sufficient answer to "Operator's" argument, and justify the practice of artificial lighting; but I would supplement them by saying that my paper was not on behalf of the photographer "whose business and income are sufficient," nor to the injury of operators and assistants, but for hundreds of struggling photographers who have now to compete with the "enterprising men" who have already successfully introduced artificial lighting in their business.

When so many good houses and eminent firms adopt night, and we see their productions circulated amongst us, it is time to act on the defensive, and by introducing an efficient instrument and process that is within the reach of all, I believe I am not acting in opposition to the interests of either employer or employees.

In conclusion, as "Operator" takes a ludicrous view of my city gentleman, I may say that I certainly do "know him best;" and if the hours and habits of the British workmen are such as "Operator" describes (he possibly has a better opportunity than myself of knowing what is most congenial), I shall be glad to leave him in "Operator's" society. —I am, sir, yours truly, R. V. HARMAN.

P.S.—After a declamatory letter, "Operator" asks me to publish my formula for the benefit of himself and others. My original formula has already been published, but I have now discarded it for one infinitely superior, which lights easily and is impervious to moisture. As "Operator" is anxious to try it, he may be equally anxious to buy it, and he will find the price in another column.

FRENCH CORRESPONDENCE.*

Recent Inventions.—As we are on the subject of inventions, and more especially as we always consider it a duty to aid the efforts of inventors by making known to our readers any novel processes that are of a kind to interest them, we take the opportunity of recording the success of a new paper for reproducing by photography plans, drawings, sections, maps, &c. This paper, called from its inventor, the *Papier Artiques*, competes with that of M. Pellet, so far as regards the services they can both render to manufacturing industry. The invention comes to us from Bordeaux. By placing the paper beneath the copy to be reproduced, and submitting it for a few seconds to the action of light, a negative is obtained with white lines on a black ground. The paper is then sensitized with bichromate immersed in a bath of water, and thoroughly washed, when prints equal to engravings or lithographs are produced with black lines on a white ground. For engineers, and all who require to obtain a large number of copies of the same drawing, this process possesses very great advantages; but it has, unfortunately, one grave fault, and that is that it is excessively costly. The price of the paper at the present time is 600 francs the ream, or 35 francs the quire; in order that it may be able to take the place to which it is entitled, and to make its way in the industrial world, the inventor must really make up his mind

* Continued from page 151.

to lower his terms. Before the *Papier Artigues* can become popular, it must be in a position to contend advantageously with other papers answering the same purpose. There is no doubt that if it can be brought within the requirements of those possessed of moderate means, there will be a large demand for it. Another model invention, deserving to be noticed, though it has no other relation with photography than that of being the reproduction of an image, consists in obtaining copies by means of an apparatus called the *Chromographe*. A copy is made by writing or drawing with a special ink; this is applied to a flat sheet of a kind of gelatinous paste surrounded by a zinc frame. By lightly rubbing the back of the paper, a negative is immediately produced on the paste; then by simple friction with the fingers a large, though limited, number of proofs can be produced. The copies are blue or red according to the colour of the ink with which the original was written. Ingenious as the above described process will be found to be, the searchers for new methods are more ingenious still. Scarcely has the *chromographe* been for a few weeks before the public of Paris (the inventor, who is working out his invention here, hails from Vienna), than another manufacturer brings out a similar process, and advertises it under the title of *Polychrome-Autographie*. The purchaser is supplied merely with a stick of a substance consisting of an aniline base and tallow; the stick, which is soft, and resembles *cosmetique* in appearance, must be rubbed over a flat surface, when it will leave a layer of the substance. To this layer is applied a sheet of paper, on which we can write or draw with any pointed body—such as a pencil, a piece of wood, an awl, or even a pin, provided only that it be hard enough to make a dent in the layer. On the other side of the sheet of paper will be found an inverted tracing of the writing. Over this negative is now laid a piece of wetted paper, and a gentle pressure applied, when a perfect impression of the copy is obtained. By this means, from the same negative, up to fifty excellent prints may be drawn in either a blue or violet colour. It would appear, therefore, that the old copying processes have seen their day, more especially as these two new methods are of marvellous cheapness.

COMPETITION OF THE BELGIAN PHOTOGRAPHIC ASSOCIATION.

We have received from the Section of Liège of the Belgian Photographic Association a circular, of which we append a translation.

Liège, 26th Feb., 1879.

SIR,—We have the honour to inform you that the Section of Liège of the Belgian Photographic Association has received from a gentleman, who desires that his name may not be published, the sum of five hundred francs to be offered as a prize for the best emulsion process. The donor has laid down the following conditions for the competition:—

1st. The regulations of the competition shall be drawn up by the Section of Liège.

2nd. It shall be open to all Belgian subjects, and to foreigners who are members of the Belgian Photographic Association.

3rd. Any emulsion, whether washed or not, with or without preservative, will be permitted to compete. The committee of judges shall decide without appeal on the excellence of the process submitted for competition.

4th. The cost of an emulsion when ready for use is not to exceed two francs per cub. centim.

Though fully recognizing the value of the Warnerke process, to which the prize of the Association was awarded in 1878, the Section consider that all the expectations that might with justice be formed of the capabilities of such a process have not been fully realized, and more especially, that the manipulations required in working it are capable of being simplified. They believe that a competition of the kind now proposed to them cannot but have a beneficial effect in introducing improvements; they therefore accept with gratitude the task of organizing the

award of the noble prize that has been placed at their disposal. In the following eight paragraphs are contained the regulations that they have drawn up for the competition:—

1. The prize for the best emulsion process is offered under the above described conditions.

2. Every emulsion submitted for the competition must approach as near as possible to the wet collodion process as regards rapidity of working and final result.

3. The committee of judges is to be composed of seven members; they will, in accordance with the wishes of the donor of the prize, hold their meetings at Liège.

4. Each competitor must send in twelve plates, 18 by 13 centim., ready for use; also three flasks of his emulsion holding one hundred cub. centim., as well as sufficient preservative, if one be employed. He must forward, with the above, a detailed description of his process marked with some cipher or device, and a sealed envelope bearing on the outside the same cipher or device, and containing the name and address of the sender. Any competitor who makes known his name will be excluded.

5. All these articles must be sent to the Secretary of the Section, M. Albert Damry, 37, Mont-Saint-Martin, Liège, before the 1st July, 1879.

6. If none of the competitors submit processes fully complying with the requirements, it is in the power of the judges to award a part of the prize to one or more processes that fulfil the larger number of the conditions.

7. The result of the competition will be declared at a meeting of the Section during the month of January, 1880.

8. The judges may cause to be published every process, whether printed or not, that is submitted to them.

Should you require any further information, we shall esteem it a favour if you will address yourself to one of the undersigned, either directly, or, in case you wish your name not to be known, through an agent.

We have the honour to be, sir, your most obedient servants,
L. L. DE KONINCK, *President*.
R. DE SELTS, *Vice-President*.
A. DAMRY, *Secretary*.

PRIZE COMPETITIONS OF THE PHOTOGRAPHIC SOCIETY OF VIENNA.

The following are the arrangements for the prize competition offered by the Photographic Society of Vienna in the present year. It will be seen that the list of medals is divided into two competitions, the terms of which are slightly different. The first list contains the medals provided out of the Voigtländer fund, the second those offered by the Society itself.

1.—THE VOIGTLÄNDER MEDALS.

1. A gold medal, value 1,500 francs. For a method of increasing the sensitiveness of wet plates.

2. A gold medal, value 1,500 francs. For the best dry process as regards certainty and sensitiveness.

3. A gold medal, value 500 francs. For a collection of studies by the gelatine emulsion process.

4. A silver medal. For a collection of studies of natural objects.

5. A silver medal. For a collection of instantaneous stereoscopic photographs.

6. A silver medal. For a collection of lantern slides for illustrating instruction in natural science, art, and technology.

7. A gold medal, value 500 francs—also silver and bronze medals. For scientific treatises, inventions, and improvements, first published either at the meetings of the Society, or in the Society's journal, the *Photographische Correspondenz*; also for meritorious photographic works.

All the above medals are only open for competition to members of the Photographic Society of Vienna.

Works submitted for competition for the medals Nos. 3, 4, 5, 6, must be sent in before the 1st October, 1879; those for the medals Nos. 1 and 2 before the 1st May, 1880.

The medals will be awarded on the report of a committee appointed to examine the works submitted for competition, and the awards of the medals Nos. 3, 4, 5, and 6 will be declared at the General Meeting of the Society in December, 1879; those of the medals Nos. 1 and 2 at the General Meeting in December, 1880.

II.—THE SOCIETY'S MEDALS.

1. *A gold medal*, value 1,500 francs. For the production by photography of printing plates in high and low relief, so as to give half-tones.
2. *A gold medal*, value 1,500 francs. For an essay on pyroxyline and collodion.
3. *A gold medal*, value 500 francs. For profound researches on asphalt.
4. *A silver medal*. For genre pictures.
5. *A silver medal*. For carbon prints taken in Austro-Hungary.
6. *A silver medal*. For a collection of photographs of ancient monuments.
7. *A silver medal*. For a collection of ethnographical studies.
8. *A silver medal*. For a collection of anthropological studies.

Works submitted for competition for these medals must be sent, carriage paid, to the President of the Photographic Society of Vienna (Dr. E. Hornig, K. K. Regierungsrath, 9, Hauptstrasse, Wien, III), before the 1st October, 1879.

The prizes will be awarded by the committee appointed to award the Voigtländer medals, and their decisions will be declared at the General Meeting of the Society in January, 1880.

In both the competitions, the works sent in must be marked with a cypher or device, and accompanied by a sealed envelope containing the name of the competitor, and bearing on the outside the same cypher or device. In no case will an envelope be opened unless the corresponding work has a prize adjudged to it.

All the works submitted for competition in the form of pictures or studies will be publicly exhibited.

The Photographic Society reserves to itself the right of awarding prizes of less value to works which do not comply in all respects with the requirements of the above programme.

Full particulars and details can be obtained of the President of the Society, whose address is given above; or of the Secretary, Herr F. Luckhardt, K.K. Hofphotograph, 18, Taborstrasse, Wien, II.

SOME REMARKS ON FINANCE.

BY F. A. BRIDGE.*

MANY years ago (I think in 1791) Mr. Holcroft wrote an excellent comedy, entitled *The Road to Ruin*, in one part of which, in consequence of the reckless behaviour of his son, "Old Dornton" (the father) is made to say:—"Oh! who would be a father!" Towards the end of the fifth act, however, things change so much for the better, and the conduct of the son comes out in such a satisfactory manner, that his father completely reverses his former sentence, and exclaims—"Oh! who would not be a father!" Now, when I first undertook the responsibilities of Treasurer to the South London Photographic Society, and found we were £9 on the wrong side to begin with, I thought the position would not be a very comfortable one; but worse remained behind, and instead of being £9, the deficiency was nearer £16. I then felt very much inclined to paraphrase Old Dornton's speech, and exclaim—"Oh! who would be a Treasurer!" Well, gentlemen, I must say I was very sorry to find that the officers of our Society, in the fulness of their artistic hearts, had allowed so many subscriptions to fall into arrear; but after a careful rearrangement of the books I found many of our best photographers had allowed themselves to occupy the distinguished but scarcely creditable position of defaulters, and that we had nearly twenty members who had not paid for more than three years! I began then to wonder whether the attainment of artistic excellence really blunted the feelings against paying debts and honourably carrying out arrangements voluntarily undertaken. Letters have been written to these defaulting gentlemen over and over again, and, as I informed the committee at our last meeting, I had

even made a final appeal to them, enclosing a stamped envelope, but with very little success. I am sure, therefore, the members will regret with me that so many of their fellow-workers and members of the photographic profession—some of them whose names are as "household words" with us all—have allowed their names for such a reason to be removed from the books of our Society, because there can be no doubt we should have thought much better of them personally, and applauded their productions none the less heartily, had they paid their subscriptions with regularity, or, when they felt disinclined to do so, had honourably resigned. It may be argued that these gentlemen rarely visit us. This is true; but I do not know whether this is any excuse for some members (not many, fortunately) who continue their attendance at our meetings with almost unerring regularity, and never pay at all! Now we are at all times ready and glad to welcome to our meetings those connected with our art, no matter where they come from; but I think if people whose names are on our books as members attend our gatherings, we have, as it were, a double right to expect they will pay their subscriptions. It might surprise a few (or perhaps many) of our members to hear the excuses made by some of those to whom application has been made for arrears. One gentleman, for instance, excuses himself for not having paid for three years on the ground that he has not received any presentation prints during that period, forgetting that not having paid his subscription he would not have been entitled to them had we been able to arrange for them. Again, if members do not pay their subscriptions, I should like to know where they think the money is to come from to provide presentation prints. Another says he has left the Society, with several other members, because of the great favouritism shown to some few. Well, gentlemen, favouritism may exist, but if it do, it is unknown to me. It has always seemed to me that all a gentleman has to do to entitle him to take part or give his opinion at any of our ordinary meetings is to be present. I never remember our worthy President, or the chairman for the evening, or any member objecting to anyone stating their views or experience, whoever they might be, and we have always been glad for anyone to do so, feeling sure that the friendly and social intercourse of late years among photographers in such societies as our own has very greatly tended to do away with many of the little petty jealousies that existed in our profession years ago. However, gentlemen, I will not take up your time with any more remarks of this kind, but proceed to business.

When December, 1878, came, and I was called upon to surrender my first balance sheet, I asked to be allowed to wait a month or two, in the hope that I should be able, during that time, to impress upon the defaulting members the desirability of paying up their arrears. I have succeeded in getting in seventy-five subscriptions during the past year, and as the number of paying members on our books was (up to December) only about fifty, you will see to what extent I have prevailed upon our defaulting members. Each meeting this year has, I am happy to say, increased our number, and I hope it will continue to be so. Up to the end of last year, however, we have a deficiency of £8 14s. 7d. How this is to be made up must rest with you. It has been decided, in committee, that at our next meeting (April 3rd) we shall offer our surplus presentation prints for sale, thinking that perhaps many new members might like to possess them or have duplicate copies, while, perhaps, some of our debtors may be troubled with sleepless nights, and we may find some back subscriptions sent to us as conscience money, still further to reduce the above sum. At any rate, I hope something will be done to obviate my carrying the loss on to the present year, because I trust that in future we shall be able to keep our income up to our expenditure, and that when December comes I may find, if there be a balance at all, it will be on the right side, and I may be able to shake hands with myself and alter my tone, as "Old Dornton" does in *The Road to Ruin*, and say—"Oh! who would not be a Treasurer!"

The Photographic News.

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INNOVATIONS IN PHOTOGRAPHY.

WE think it will be universally admitted that no photographer will wish to produce portraits by artificial light when it is possible to secure daylight. A crusade against artificial light is surely then scarcely more wise than Don Quixote's tilt against the wind-mill. Some of our correspondents have, however, been impelled to denounce portraiture by artificial light, and the present interest in it, as something utterly inimical to the interests and credit of the art and its professors. We can sympathise to a considerable extent with the real object of their opposition. This, we take it, is rather a possible, and, as they think, probable, result of the introduction of artificial light, than the use of the light itself. They fear that if artificial light for portraiture acquires anything like general adoption, the consequence will be an unwholesome kind of competition, degrading to the art; that night photography will be a common and inferior photography, of which there is enough already; and that respectable studios will be placed at an apparent disadvantage in the eyes of the public if they do not avail themselves of appliances to be found in commoner studios. They fear, moreover, that longer hours of work will become inevitable. Some will add that the great aim of enthusiastic photographers has for years past been to improve and elevate photography, and give its products the character of fine art, whilst the movement in question must have an inevitable tendency to lower the standard of work. There is something to be said for this view of the question. Unfortunately many of the opponents of artificial light portraiture are not discriminating in their attack, but utterly condemn the whole thing.

We must confess, on the contrary, we look with considerable favour on all experiments for applying artificial light to photographic purposes, and we regard every experimentalist in this direction as aiding materially in perfecting the appliances of the art. To object to the use of artificial light because sunlight costs nothing, is about as legitimate as to object to watering a garden or irrigating a field because rain costs nothing and answers the purpose better. No one, as we said at the outset, will willingly use a costly substitute when nature's more efficient agencies are available. But to what extent is daylight available in this country during a great part of the year? In the first month of the present year upon how many days was there any sunshine recorded at the Royal Observatory? During the thirty-one days of January last there were twenty-three days without any sunshine, and the total amount of sunshine during the remainder of the month did not amount to fifteen hours. During the fourteen days ending on the

fifth of February, the latest date to which we have record before us, there was no sunshine to record at all. But marshalling of figures is not necessary to convince photographers of a fact of which they have such bitter knowledge, namely, that during a great part of the year daylight is limited to very few hours, and during these hours it is often very bad. That there will also, at all times, be some to whom night photography is more convenient there cannot be a doubt, and the existence of a few establishments in a large town where night photography is practised need constitute no offensive competition with daylight studios who pursue their own course unconcerned as to their night competitors. A perfect mastery of the conditions of artificial illumination will, moreover, often prove of service during winter days when there is no efficient light and it is not convenient to close the studio.

"Decor Inemptus" takes exception to the expense of the experiment; but he conveniently overlooks the fact that Mr. Harman, whose paper at the South London Society seems to have elicited a burst of excitement, described an arrangement which might be very cheaply improvised. The portraitist whose choice or necessity may lead to adopt night photography as a part of his general practice will most probably purchase one of the most efficient forms of apparatus even at a high cost; but he whose aim is experiment, and the possibility of occasionally applying the light, will probably aim at cheapness, even if it involve improving his own appliances.

"Decor Inemptus" gives some advice in which we can cordially concur, when he recommends portraitists to devote the hours of the slack season to remodelling arrangements, and, above all, to rearranging and cleaning specimens. We are occasionally shocked to see faded specimens hung in a dilapidated frame with a dirty glass in front. Specimens should not only be the best work the portraitist can produce, but in the best condition, and displayed to the best advantage. Where photography is followed as a business, the maintenance of respectability in connection with it is of quite as much importance as experiment to advance its technical qualities!

Amongst those who object to innovations in photography, as they regard all improvements which involve any radical change of practice, we have received communications from several who are anxious to stem the revolution which threatens to abolish the nitrate bath in the studio. Dry plates are to these correspondents an abomination to be denounced and exposed. The pressure on our space at the present time has compelled us to withhold many of these letters, which would have been interesting as illustrating the bitterness which can be excited in some cases by any effort to secure reform. Like Charles Mackay's "foolish preacher," our correspondents are disposed to cry out, "Change is rash, and ever was so: ye are happy as ye are!" On the other hand, it is to be remembered that invective is depressing to sensitive persons. We feel ourselves and our readers greatly indebted to those able and experienced correspondents who give in our pages the results of their experience for the instruction of others, and we scarcely care to permit them to receive in return the denunciations of those who fail to appreciate the value of the instruction.

BRITISH ASSOCIATION.

THE annual report of the Association is always full of interesting information, but it is, unfortunately, so late in issue, rarely having been ready until about the time of the next meeting, that much of its interest is lost. Owing, we understand, to the good offices of the President for the year, Mr. Spottiswoode, the report of the Dublin meeting has been issued earlier. The following extracts, relating to committees appointed, contain points of interest to photographers especially, as well as to all interested in the progress of science.

Committees Involving Grants of Money Appointed at the Recommendation of the General Committee.

That the Rev. Dr. Haughton and Mr. B. Williamson be a Committee for the Calculation of Tables of Sun-Heat Coefficients; that Mr. B. Williamson be the Secretary, and the sum of £30 be placed at their disposal for the purpose.

That the Committee, consisting of Mr. James Glaisher (Secretary), Mr. R. P. Greg, Mr. Charles Brooke, Dr. Flight, and Professor A. S. Herschel, on Luminous Meteors be re-appointed, and that the sum of £20 be placed at their disposal.

That Dr. Wallace, Professor Dittmar, and Mr. T. Wills be a Committee for the purpose of reporting on the best means for the development of Light from Coal-gas of different qualities; that Mr. Wills be the Secretary, and that the sum of £10 be placed at their disposal for the purpose.

That Dr. Farr, Dr. Beddor, Mr. Brabrook, Sir George Campbell, Mr. F. P. Fellows, Major-General Lane Fox, Mr. Francis Galton, Mr. Park Harrison, Mr. James Heywood, Mr. P. Hallett, Professor Leoni Levi, Sir Rawson Rawson, Professor Rolleston, and Mr. Charles Roberts, be a Committee for the purpose of continuing the Collection of Observations on the Systematic Examination of Heights, Weights, &c., of Human Beings in the British Empire, and the Publication of Photographs of the Typical Races of the Empire; that Mr. E. W. Brabrook be the Secretary, and that the sum of £50 be placed at their disposal for the purpose.

Reports and Researches not Involving Grants of Money.

That the Committee, consisting of Dr. W. Huggins (Secretary), Mr. J. P. Lockyer, Professor J. Emerson Reynolds, Mr. G. J. Stoney, Mr. W. Spottiswoode, Dr. De La Rue, and Dr. W. M. Watts, for the purpose of preparing and printing Tables of Oscillation Frequencies of Solar Rays be re-appointed.

That a Committee consisting of Captain Abney (Secretary), Professor W. G. Adams, and Professor G. C. Foster, be appointed to carry out an investigation for the purpose of fixing a Standard of White Light.

BURNISHING.

BY J. KAY.

I AM led to write a little on this subject, owing to the number of advertisements that I have seen lately in the NEWS, by which photographers appear anxious to dispose of their burnishers; from which I conclude that, in their case at least, burnishing (that is, the process itself, not the results) is not a success. It is scarcely necessary to state that the results obtained by the successful manipulation of the burnisher are very desirable, and superior to anything that can be obtained by ordinary rolling. Not only are superficial defects of the albumenized print (such as scratches) entirely obliterated, but a highly glazed surface is imparted, which adds greatly to the beauty of the picture.

In giving a few directions for the guidance of those who are anxious to be successful with their burnishers, I shall state a few points of interest which occur to me as I mentally run through my experience in the matter; and the first point is the touching or spotting generally necessary upon the print.

If this be left till after burnishing, there are two objections mostly arising: first, the difficulty of spotting a surface that is more like a japanned tea-tray than a piece of paper; and second, the appearance of the spotting (dull), in contrast with the picture (bright), and this second intensified, should the defects be many and large. There is only one method known to me by which the spotting can be satisfactorily performed prior to burnishing, owing to the fact that the colour applied, when previously dissolved in water or gum-water, is dispersed when passed through the burnisher in the shape of a comet from the spot where originally deposited.

The method I allude to is to dissolve the pigments according to tone required, by the aid of a solution of albumen, composed of—

Pure albumen	...	...	...	1 part
Water ..	...	...	...	1 "

Shake well together in a bottle in which a few pieces of glass have been placed to cut and disperse the albumen, add two or three drops of pure ammonia, and the solution can be preserved for a long time. Mix up the palette entirely of the albumen solution and pigments, being careful to add no water, and when dry, no more albumen is required, the usual method being adopted, viz., the brush moistened in the mouth. This is important, for I have found in practice that albumen frequently used to dissolve the prepared pigment on the palette has created an excess, and in burnishing the spotting has cracked and left the surface.

The second point of interest is the lubricator, the preparation of which ought to be a very easy matter. Take one ounce of Castile soap, which may be obtained of any chemist for about one penny, and dissolve in sixty ounces of methylated spirit. The application of heat is essential to the thorough dissolving of the soap, or rather to the saturation of the spirit. Take therefore your bottle (a good strong Winechester quart will do) containing soap and spirit, and stand it on the hob, giving it a shake occasionally; and if at the end of five or six days there should be in the fluid, *when cold*, the appearance of thin fleecy clouds, add twenty ounces fresh spirit, and heat again, doing this until the supernatant liquid, *when cold*, is transparent, and of a faint yellow colour; decant, and apply to the picture with a soft rag, being careful to rub over the whole surface.

I find the ordinary Winechester to be capable of standing great heat on the hob. Let the stopper fit loosely, and raise it occasionally.

The third point of interest is, though apparently trifling, of great moment. I may be asked, how dry ought the print to be? This is a vital question. Should the print be very dry—bone dry, say—greater heat will be required to burnish properly; thus the tone of the picture will be affected considerably, and should the tone of the picture, before burnishing, be that required after, it will be impossible to secure it. The hotter the burnisher, the warmer the tone produced by it, and this I consider to be one of the manifest advantages of burnishing; for surely it must be an advantage to know, when one has a cold, mealy batch of prints, that some amount of warmth and beauty can be put into them, and render them fit to be seen. As a rule, the tone of the prints is, before burnishing, the same as that required after, in which case the cards must not be bone dry, but limpid; pliable, not damp; otherwise blisters are likely to appear; and, further, a highly glazed surface cannot be produced when the card is damp.

The last point that I shall introduce is the scratching of the burnishing plate. This is caused by grit, small particles of which are often found in the cards, and are injurious in this respect in those portions of the cards exposed, viz., at the top and bottom and sides. This is the most prolific source of scratches, though sometimes grit is present in the mounting material. I find the best way to detect this source of annoyance is to pass the print through the burnisher once, and then examine it; should there be any grit in that end of the card first inserted, the scratch will appear on the surface, and should there be any in any other part of the card it will have done its work on the metal, and the second time, should the card be passed through in the same place, every defect will appear. It is always advisable to examine the card each time after passing through twice; after that, if all be right, there is, as a rule, nothing to fear. Always put the card through the same way; don't reverse it, and, as nearly as possible, in the same place. These two hints, if attended to, will save many troubles. Should a scratch appear on the surface of the card, it can generally be traced to its fountain head—a little grit in the card. Remove with the point of a penknife, and after polishing the burnisher pass through again. Should the scratch be very deep, and the grit very

large, my advice is have nothing more to do with the picture; a deep scratch can never be properly removed, if you burnish again a dozen times. To remove scratches from and to polish the burnisher, procure a block of hard wood, about four and a-half inches long, two and a-half inches wide, and one and a-half inches deep. Cut the polishing paper into strips of any suitable size (five inches by three inches will do), and then fold round the wooden block, rubbing the burnisher lengthways, which is the contrary direction to that in which the pictures are passed through. The finest polishing paper is essential, and as photographers, particularly those in the country, may have a difficulty in getting it (I have been able only to get it at one place in London), for their assistance I add a few particulars concerning it. It is commercially known as "OOO Polishing Paper," and may be had at 2d. per sheet, or 4s. per quire, of Mr. J. Buck, 56, Holborn Viaduct, E.C.

Notes and Queries.

MOIST COLLODION EMULSION.

DEAR SIR,—In an article in the Year-Book of 1879, on "Emulsion Collodion *versus* Gelatine," Mr. William Brooks refers to a glycerine preservative for moist emulsion, which, to my mind, appears so simple and effective, that if he would kindly publish details of his formulæ for plates and development of same, I feel certain it would be of interest to your readers, and would confer a favour on your humble servant,
THE CLYDESDALE LADDIE.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE monthly meeting was held on Tuesday evening last at the Water-Colour Gallery, Pall Mall; the President, Mr. JAMES GLAISHER, F.S.A., in the chair.

The minutes of the preceding meeting having been read and passed,

THE CHAIRMAN read the Report of the Committee recently appointed to consider the management of the Society's Journal. The report had been laid before the Council, and approved. The purport of the recommendation was, that in future the proceedings should be reported as nearly *verbatim* as possible, and that the Journal should be published on the next Friday but one following the monthly meeting. [This will delay the appearance of papers in these columns.]

The discussion on Mr. C. Bennett's paper on "Gelatine Emulsion" was then resumed.

In the absence of Captain Abney, who was unable to attend in consequence of family bereavement,

THE SECRETARY read a paper on "The Effect of Prolonged Emulsification in Gelatine Bromide," in which Captain Abney described certain experiments, and the theory he had deduced therefrom.

Mr. BEDFORD then read a paper on some experiments with various coloured glasses for photographic purposes. He passed round the results of his trials of different examples of glass by direct light; in each case the sample of coloured glass was placed in juxtaposition with the photographic result. As a rule, he found that though a single thickness of ruby glass was superior to one of orange, two thicknesses of the latter were preferable to one of ruby; and that with sensitive bromide plates, three thicknesses of orange glass would give a perfectly safe light, and comfortable to work by.

Mr. BEDFORD also exhibited a print from a negative on a Bennett plate, which had been exposed four months after preparation, and developed seven months after exposure, with most satisfactory results.

Colonel WORTLEY read a paper "On the Action of Nitrate of Silver in the Production of Red Fog," in which he stated that personally he had complete immunity from this defect, a fact which he attributed to his employment of nitrate of uranium in the emulsion. He exhibited two bottles containing gelatine, to one of which nitrate of silver alone had been added, to the other

nitrate of silver and nitrate of uranium. The former presented a reddish brown appearance, while the latter was colourless. In explanation of the action of silver on gelatine, the Colonel showed two bottles containing respectively gelatine and collodion, which had been exposed to the light in contact with nitrate of silver; the former had acquired a deep brown colour, the latter remained unchanged. He went on to say that he considered that the quality of gelatine greatly depended upon their being treated throughout in such a manner that the various operations were in harmony. As an instance, he said that Mr. Bennett emulsified for some days at a low temperature, while he (Col. Wortley) emulsified for a few hours at a high temperature; and yet, when exposed together a short time previously, their plates were found to be equally sensitive. He concluded by quoting from the *British Journal* of November 14th, 1873, the first published account of washed emulsion.

Mr. SAMUEL FRY next read a paper on his experience with gelatine plates in the studio, and showed two fine negatives taken that day with exposures of less than one second. In the course of his remarks, Mr. Fry said he did not think he should ever use the bath again. With regard to the uncomfortably dim light recommended for these plates, he might say his laboratory, which was of considerable size, contained two windows about six feet by four each. These were covered with four thicknesses of yellow paper, which gave illumination sufficiently non-actinic and comfortable for work.

Mr. HERBERT B. BERKELEY read some notes on gelatine emulsion, and showed a number of specimens in illustration. Amongst other matters, Mr. Berkeley alluded to the vagaries of alcoholic gelatine emulsion, and to the possibility of working with an excess of silver.

Mr. WAINWRIGHT, Jun., said that gelatine had been said to be not under control as regarded exposure and development. In refutation of this charge he passed round a plate, one-half of which had been exposed for three-quarters of a minute, the other half for five seconds, and the development carried out to suit the longer exposure. He thought this showed that gelatine plates were under control.

Mr. CHARLES BENNETT, in response to the Chairman, undertook to reply, in the form of a paper, at the next meeting, to the various communications which had been made that evening.

Mr. W. COBB asked if any gelatine workers had noticed a discolouration of their negatives under the action of light. His negatives, many of which were intensified with iron and silver, gradually acquired a red discolouration during printing, and some had become wholly useless from this cause.

Col. WORTLEY thought it was due to the action of the intensifier. Gelatine plates required far more washing than collodion, and if the slightest trace of hypo were left in the film it would inevitably ruin the plate.

Mr. WHITFIELD was understood to say that he had employed the iron intensifier without experiencing the result complained of by Mr. Cobb.

Mr. BENNETT said that in addition to washing well after fixing, the plates should be dried at once, in order to prevent frilling.

Mr. COBB said that in one or two cases, finding his negatives too dense, he had been able to reduce them by means of a solution of hydrochloric acid in water (a solution of one part in eight).

Mr. T. SEBASTIAN DAVIS showed a couple of transparencies of a group of members of the Society in the act of shaking hands on their departure from a friend's home. The figures were all in motion, and Mr. Davis explained that the negatives were taken by Mr. Bennett with a drop-shutter after half-past-five, one evening last week, only half-an-hour before sunset.

The proceedings then terminated.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE monthly meeting of this Association was held on Thursday evening, the 27th ult., at the Free Library, William Brown Street, Mr. THOMAS CLARKE, President, in the chair.

The minutes of the previous meeting were read and confirmed.

The President, Treasurer, and Secretary were appointed delegates to attend the meetings of the Associated *Soirees* of the literary, scientific, and art societies of Liverpool.

Mr. H. HOULGRAVE exhibited a number of negatives, with their corresponding prints, which had been taken in illustration of his paper read at the February meeting. He (Mr. Houlgrave) said that with gelatine plates generally the difficulty was to avoid getting the negatives either too hard or flat. By his method he secured negatives giving beautifully soft prints.

He developed with carbonate of ammonia, and, as far as he had been able to try them, he thought there would be no difficulty in working them in such a climate as the West Indies, for which purpose he was carrying on his experiments.

The President, in moving a hearty vote of thanks (which was passed) to Mr. Houlgrave, alluded to the beautiful delicacy of the negatives exhibited, and expressed a wish that Mr. Houlgrave should submit some of his views to be selected for a presentation print.

Mr. HOULGRAVE replied that, unfortunately, he did not think he had any of sufficient pictorial interest, or he would have gladly done so.

The Council reported that Mr. Tyrer's negative of the "Old Hut," and Mr. J. H. T. Ellerbeck's of the "Castle of Chillon," had been selected for presentation prints, and their selection being approved of, the Secretary was requested to make arrangements for the printing.

A lantern exhibition closed the proceedings, at which Mr. Meacock exhibited a lantern with three wicks against one with two, and Messrs. Clarke and Bucknall contributed a number of fine transparencies.

The meeting was then adjourned until the 21st instant.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY
The Association met on the 17th January last, under the presidency of Dr. VOGEL.

The CHAIRMAN laid before the meeting some collotype prints in colours by Herr J. B. Obernetter, of Munich. His method is to reproduce from the same negative, by the powder process, a number of other negatives under various degrees of exposure, so that the different parts are more or less covered, according to the time of exposure. From these negatives collotype plates are produced, and the latter are then rolled up with the properly selected colours.

Herr OBERNETTER also sent a communication on dry plates, in which he pointed out that gelatino-bromide surpasses any other kind of film in sensitiveness, but requires troublesome manipulation in drying and developing; he therefore prefers collodion emulsions for general work. This emulsion he now prepares himself, using as little pyroxyline as possible, and the plates, when they have been coated, and the film set, he places in a solution of—

Nelson's gelatine	2 parts
Alcohol	60 „
Lukewarm water	40 „

and afterwards puts them to dry in a vertical position. By this means great sensitiveness is obtained, the plates also retaining the impression of light, while plates that have not been covered in this way go back after a short time, so that it is necessary to develop them immediately after exposure.

Herr MARTINI exhibited some negatives on gelatine plates of Messrs. Wegner and Motter, of Amsterdam, after an exposure a little shorter than that required for wet plates.

Herr PRUMM advised dealers and manufacturers to be very careful in packing plates for transmission; he complained of having received several packets of dry plates in which a number were spoiled by the light penetrating, owing to defective packing.

Professor VOGEL exhibited two portraits taken with an exposure of two seconds in December by W. Cobb, of Woolwich, on gelatine plates of Messrs. Wratten and Wainwright, which, in regard to delicacy, left nothing to be desired. Particularly worthy of notice is the detail in the white linen, which in ordinary negatives always appears over-exposed. The speaker attributed the latter defect to irradiation produced by reflection from the after surface of the plate, and remarked that in his own photographs of the spectrum taken on gelatine plates he had never observed this phenomenon, even when they were considerably over-exposed; whereas with collodion plates it almost always made its appearance. He held this to be a great advantage in using gelatine plates, especially as it was completely in the power of the maker to increase their sensitiveness to any extent, by keeping the emulsion in a fluid condition for a longer or shorter time before he allowed it to set. Wratten and Wainwright, with whose plates he had lately been experimenting, keep two kinds in stock: ordinary ones, which are said to be equal in sensitiveness to wet plates; and instantaneous ones, which are from ten to twenty times as sensitive as the latter. As regards the first of these, he had found that, employing the developer recommended by Wratten, the sensitiveness was about half that of a wet plate; but by increas-

ing the amount of ammonia in the developer to six times that advised by Mr. Wratten, he had been able to bring out an image to a sufficient extent after a shorter exposure than that required for a wet plate.

Herr SCHAARWACHTER was of opinion that the phenomenon of irradiation could generally be avoided by an adequate acidulation of the bath; he also expressed a doubt whether gelatine plates were always free from irradiation.

Herr SELIGMANN stated that he had met with irradiation on gelatine plates; but the Chairman believed that this effect could only be possible when the bromide film was too thin and semi-transparent; the films with which he had experimented were perfectly opaque.

Herr PRUMM insisted that the gelatine processes were deserving of very close attention on the part of photographers. The films were sometimes astonishingly sensitive, but the development was attended with much that is disagreeable and tiresome. It took a long time, and could not be so well watched as in the case of ordinary plates. The intensification was also difficult. Altogether he believed that further experiments on the subject were highly necessary.

At the meeting of the 7th February, Professor VOGEL, who again occupied the chair, read two letters on the subject of the fading of carbon prints. In the first of these Herr A. OTT maintains that the permanence of colour in the gelatine film is thoroughly assured provided a reliable pigment be employed. For this purpose he advocates the use of alizarin, which, as he asserts, cannot be less durable in conjunction with gelatine than it is when taken up by animal or vegetable fibre. The theory of Dr. Monckhoven, that an insoluble chromate is retained by the paper, is combated by Herr Ott, on the ground that when uncoloured films of chromate gelatine are washed in hot water, the yellow colour due to the chromate of chromium is changed to green, caused by the perfectly inert chromium oxide. Any one, Herr Ott adds, can convince himself of the permanence of alizarin, by exposing gelatine coloured with that substance for seven months to strong sunlight, at the end of which time it will be found to be unchanged; but all preparations of cochineal must be put on one side as quite useless. The second letter came from Herr Tönnies, of Aalborg, in Jutland, and was to the same effect as that of Herr Ott. According to the former, it rests entirely with the manufacturer and his choice of a permanent colour, whether his carbon prints can stand a long exposure in a show frame.

Herr REICHARD remarked that some transparent carbon pictures which he had taken two years ago, and which since then had been exposed fully to the light, and to all the changes in the hygroscopic condition of the atmosphere, as well as to variations in temperature, had to a certain extent lost their warm brown tone, but in every other respect were unaltered. They were liable to peel off when the substratum was one of collodion, but not so much as when chromated gelatine was used for that purpose.

Herr STEFFENS had never noticed the peeling off even with a collodion substratum, but Herr Kuntze had suffered from it in the case of larger pictures, and had been able to prevent it by varnishing them.

Herr SCHAARWACHTER had observed that carbon pictures fixed in the window-panes of properly heated rooms soon peeled off, while those in the windows of corridors that are not artificially warmed remained perfect, and that without studying their being subject to washing with water every three months. The Chairman observed that the washing was a very hard test, but that windows in corridors were not so much exposed to variations in the hygroscopic conditions of the atmosphere and in temperature as the windows of a room.

Herr FAHLING remarked that carbon positives were apt to peel off in the places where they had been retouched.

Herr RICHTER had experimented with a glass carbon picture by covering the half of it with cardboard, and then exposing it in a copying-frame during extreme summer heat; he found, on removing it, that the uncovered part had peeled off, while the other half remained in good condition. Pictures that had been worked in oil colour showed no signs of peeling.

Herr QUINDE opened a discussion on a defect in albumen, which, though not previously unobserved, he had only himself met with during the last few weeks. The film of albumen was loosened by the baths to such an extent that when the plates were removed from the fixing bath it could be rubbed off by the least touch with the finger, and in some cases came off of its own accord.

Herr REICHARD ascribed this phenomenon entirely to the intense cold that had lately prevailed. The silver bath, he maintained, ought never to be lower in temperature than 15° R.; with a temperature in the silver bath and drying room of 2° to 4° R., the defect observed by Herr Quide was very apt to occur. Of course the paper employed was a factor in the case, as some kinds of paper were able to stand greater cold than others. In reply, Herr Quide was inclined to agree with the last speaker, as in the case he had alluded to, his silver bath had often been near freezing, and so soon as the weather got warmer the defect disappeared.

Herr SCHAARWACHTER believed that with some kinds of paper the same difficulty would be met with at a comparatively higher temperature; in such cases he had avoided it by silvering the paper for three or four minutes, instead of the usual two minutes.

Herr ROLOFF had heard from good authority that in order to increase its glossiness, albumen paper was sometimes adulterated with gelatine; but the Chairman doubted this, as gelatine is dearer than albumen.

Herr BOLL showed a camera with an arrangement for electrifying the plate. The slide is made to move on brass guides (both above and below), each guide being connected to one of the poles of a weak galvanic battery. At two opposite corners of the slide are fixed a couple of wires arranged to touch the plate so that the electrical current shall flow diagonally across it, and pressing the other extremity by springs on the brass guides. In front of the objective is a pneumatic shutter, which is connected by an ingenious mechanism with the above arrangement, so that when the shutter is open contact is made, and when closed it is broken. By this means the electric current passes across the plate only while the light is acting on the latter.

REPORT OF THE PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

The following is a digest of the proceedings of the meeting held on December 3rd, 1878, President NEWTON in the chair.

The minutes of the last meeting having been read and confirmed,

Dr. HIGGINS said that he would like to make a few remarks in relation to the matter of exposure, or rather over-exposure. When a sensitive plate was exposed to the actinic influence for a certain length of time, which gave what was wanted as far as the production of the image was concerned, it was called a normal exposure. If that exposure were made considerably longer, it was termed an over-exposure. What was the usually recognized effect of a much prolonged over-exposure upon a sensitive plate upon the high lights?

PRESIDENT. It would depend to a very great extent what the effect is upon the high lights; what the sensitive salt was, or its combination. A bath plate over-exposed produces what is called solarizing on the high lights. An emulsion plate, or certain kinds of emulsion, did not present that phenomena; the plate could be exposed with impunity almost without the high lights solarizing in development. Where an object presented violent contrasts in the strong sunlight, like black and white, or white exposed to the glare of the sun, and the shadows were black, to make a picture by the bath process that would represent that truly would be next to impossible, because before the detail in the dark shadows and blacks could be brought out, the high lights would be overdone. With a dry plate or a wet emulsion plate properly prepared, there was great latitude.

Dr. HIGGINS. Then I understand that there is greater latitude of exposure recognized in the emulsion plate than in the bath plate?

The PRESIDENT. I so recognize it; but I don't speak for anybody but myself.

Mr. CHAPMAN said that his experience as to the bath plate compelled him to differ with the President; that no matter how strong a contrast there might be, that by a prolonged exposure, though the high lights commenced their action sooner than the other, they did not continue with that rapidity, from the fact that the iodide of silver was almost perfectly non-actinic by transmitted light, and that the shadows caught up, so to speak.

Mr. ROCHE stated that his experiences in California and Washington, where the high lights were very strong and the shadows very deep, induced him to alter his collodion, reducing the iodide and increasing the bromide, when he got a very fine set of negatives, the relative proportions being five of iodide and three of bromide.

Mr. CHAPMAN said his collodion had the same proportions, and he had always found that to be a very fine working collodion, and

that his results might be due partially to the salt in the collodion as well as the prolonged exposure.

Dr. HIGGINS asked what was meant by latitude of exposure? His inquiry was in reference to the matter of high light, simple high light and absolute shadow. By the term latitude of exposure we would infer that you can expose too long for the high light. Are we taught that after a certain time, and not a very great length of time, a reverse action of the sun takes place, and the image goes back?

The PRESIDENT stated that his manner of exposure, if the sun were at his back, and the shadows consequently few and not strong, was to give a very short exposure. If the sun struck the picture at right angles, and the shadows were very heavy, he judged by what he could see of the detail on the ground glass, without reference to the high lights at all, how long it would take to get the detail out of the darkest shadows, and exposed accordingly. In different localities, and on different days, the light was entirely different, that a person had to become familiar with the appearance of the light; and to expose a dry plate with any certainty, he required considerable experience, and must then be sure to expose enough, because he had great latitude. In case of over-exposure, the developer could be modified so as to produce equally good negatives from a plate exposed two minutes and a plate exposed one minute.

Dr. HIGGINS. Take a white image with a black cloth behind it; there you have simple high light and absolute shadow. Now, I want to know what becomes of an over-exposure there on that high light? Have we such a thing there as an over-exposure? We give a certain exposure, which we say is a normal exposure. Now if you increase, double, triple, quadruple, what will result; will it be more intense, or are we taught that it will weaken?

Mr. ROCHE. With the bath plate we know we have fog, but with emulsion the result is altogether different.

The PRESIDENT. If you take a positive and put it over a dry or wet emulsion plate in the sun, and let it lie five minutes, you will have from that negative a duplicate negative. Everything is reversed, that is, with the bromide emulsion.

Mr. BIERSTADT stated that the process described by the President, which was also his experience, would seem to prove that a prolonged action did reverse; but that he should differ with the President in saying that emulsion had great latitude, and say that it had very little.

Dr. HIGGINS exhibited to the Section a picture taken upon a dry plate, one-half of the plate having been given a normal exposure of one second, and the other half an over-exposure of one hundred seconds. The way in which the experiment was made was as follows: A negative prepared for the occasion of black and white circles, resembling the ordinary sharpshooter's target, was placed in the printing-frame, the dry plate was superimposed upon it, and exposed as a whole for a second to the light. It was then taken in the dark room, and there was interposed between the two—i.e., the negative and the sensitive plate—a piece of cardboard covering one half of the plate. The whole was then exposed to the light for one hundred seconds. The half which was covered had one second exposure, and the half which was uncovered had one hundred. In examining the plate you will see a beautiful penumbra or shadow caused by the interposition of the mask between the negative and the sensitive plate. This experiment showed that the image had not gone back. The emulsion was a bromo-iodo chloride emulsion! It was the generally received opinion that by a greatly prolonged over-exposure the high lights would go back again. In *Hardwich's Chemistry* reference was made to such fact in the experience of Mr. Mason, where he called attention to the alternating action of light upon a sensitive plate. This experiment showed conclusively that upon a bromo-iodo-chloride emulsion plate, at least, that such is not the case; that exposure might be indefinite, and that the action of the high lights would be simply more and more marked.

Mr. MASON. Perhaps Dr. Higgins' experiment is not in exact accordance with the experience of landscape photographers from this fact—the Doctor has there the high light and the shadow, as he terms it, the two extremes contrasted. Now, why does a plate under the developer present this appearance, which is termed "going back," or the negative being thinner, made by a long exposure? Let us ask ourselves what forms the image; what is the action of the developer? The developer acts most readily where the light has been the strongest; there we get the longest deposit of silver. If we put on a sufficient amount of the developer to flow that silver off, of course it has left the entire surface of the plate; but if we keep that silver on—sup-

pose we have a spot of white in our picture—there we have a great deal of silver deposited at once, while on the shadow there has been very little deposit. Now, if you continue the action of the developer, and there is yet free silver left on the plate, it commences to deposit on the shadow portion, when the light has been weak, and the contrast is immediately reduced by this deposition of silver on the shadow portions, and the contrast decreases the longer we continue that action up to a certain point.

Dr. HIGGINS called attention to the fact that the plate exhibited was a dry emulsion plate developed by the alkaline developer, in which there was no silver used.

Mr. MASON said that the silver in the film was effected in quite a similar way.

Mr. NEWTON: It is a fact which has been proved that by long exposure the action is reversed. All that is lacking here in the Doctor's experiment is time.

Mr. BIERSTADT: In this experiment of making a negative direct from a negative, I took an emulsion plate and put it in contact with a negative in an ordinary pressure-frame and laid it in the sunlight. If that was given one hundred seconds in a camera, what would the exposure have been to correspond with the six minutes I gave it in the sun? In the light I had, the one-hundredth part of a second would have been overtime, and I gave it six minutes.

Mr. NEWTON: You will see the difference between that experiment and the Doctor's. That dry plate would undoubtedly have been over-exposed for the production of a positive in one-twentieth of a second in broad sunlight. Consequently he gave it six thousand times more than the time required to make a positive, allowing five minutes' exposure. If the Doctor, instead of giving one hundred times more, had given about six thousand, he would have obtained probably the same result.

Dr. HIGGINS: The deduction from what I have said is simply that practically we need not fear an over-exposure in reference to our image disappearing. Theoretically and absolutely also, as a matter of fact, we recognize that the image will disappear, but if a one hundred times' over-exposure does not cause it to do so, and it needs six thousand or more times, I think that practically we need not fear it.

Mr. BIERSTADT exhibited a few specimens of the new process of printing called the "Artotype," stating, in answer to inquiries, that the difference between the Artotype and the Albertype consists in the use of specially prepared materials, such as gelatine, ink, paper, &c., applied to plates so as to insure a fine grain and to give increased brilliancy. By the Albertype process it would require two and a half hours to dry a plate, and by this process only twenty minutes, washing it in twenty more, and it is ready for the press. The paper used should have a very fine surface. Ordinarily a good printed would print, perhaps, three hundred impressions in a day. As to the cost compared with silver prints, it would cost a man's time; the cost of the material was nominal. Paper enamelled and varnished is less than half the cost of albumen paper, and silver was not used. Lampblack is quite cheap, and one pound of printing ink will make several tons of pictures. I have not tested its capacity for printing; the most I have taken is eight hundred from one plate, and still the plate was as good as any plate I have ever used by the old process, and I have printed forty-five hundred impressions from one plate by the Albertype. We can continue to print day after day from an Artotype plate, or we can use a plate and let it lie for a week, and then begin again with it.

Mr. ROCHE exhibited a few pictures made by a similar method, and explained his process, which he called the typograph.

Dr. HIGGINS ask if it is the generally received opinion in emulsion plate photography that a preservative is what its name imports; or if it is necessary for a dry plate when put away for future use?

The PRESIDENT: One of the essential elements is the presence of free silver on the bath plate. Every one who has tried to develop a bath plate after thoroughly washing it has made a failure. Now whether a bath plate or an emulsion plate, after being thoroughly washed in order to develop an image on it, it is necessary that something should act as a substitute for the silver. Organic matter has been recognized generally as acting to a certain extent as the required substitute, giving force and character to the negative. Originally it was called a preservative, because it was supposed the keeping qualities of the plates were improved. Any photographer knows that nitrate of silver is not sensitive to light except in the presence of organic matter. Here, however, organic matter acts an important part in presence of bromo-iodide of silver

instead of free nitrate of silver. About a year since, in an editorial in the *British Journal of Photography* on the subject, it was maintained that the organifier did not act in any sense as an accelerator, or in any way increase the sensitiveness of the plate. This view is not in harmony with my experience. I find that marked differences result from the use of different substances to organify the plates. In the article referred to it was maintained that the organic matter gave additional vigour and intensity, and that only; and this fact had led the mind to erroneous conclusions. I find that with some organic substances the sensitiveness of the film is very much greater than without any, and I find that my conclusions on this subject harmonize with those of a large class of experimenters.

Mr. CHAPMAN: I think that, aside from the organifier, that it is fully recognized, and borne out also by experiment, that certain things applied to a plate preserves the latent image from deterioration after exposure.

Dr. HIGGINS: Mr. Chapman's view of the meaning of the term preservative is different, I think, from that usually accepted. The term preservative, as he used it, refers to the keeping of the latent image. Such being the view usually held, on the second of last March, I showed a number of emulsion plates, put them by in a box, using no preservative on them. On December 2nd, exactly nine months after, I exposed them. The exposure was in every way similar to what it would have been upon a wet plate; not the same as if it had been a preserved dry plate, I mean, because my preserved dry plates are much more rapid than my wet ones. On the usual exposure, then, of a wet plate being given to them, the images appeared. There was no organifier in the emulsion.

Mr. CHAPMAN thought that the bromide emulsion plates do not require any preservative, so far as the keeping qualities of the plate are concerned; that all that is required on emulsion plates is to preserve the latent image after it has been impressed upon a plate.

The PRESIDENT: An ordinary emulsion dry plate, used in its normal condition after washing, I consider about as sensitive again when dried with a preservative on. If the wet plate is used with the accelerator, that makes it much quicker than the dry plate; in my experience, about four times as quick. Some time ago Capt. Abney published an article bearing upon this subject. He made a series of experiments, and claimed to have demonstrated that tannin would not preserve an emulsion plate so that the image could be developed after a certain time had elapsed after exposure, but that by the addition of gallic acid the emulsion plate would retain an image indefinitely after exposure. Whether his conclusions have been verified by any other experiments or not, I do not know. I have never seen any statement bearing upon the subject at all. He is very reliable as an experimenter.

The Section then adjourned.

Talk in the Studio.

PHOTOGRAPHY OF ANIMALS IN MOTION.—The *Times*, referring to Mr. Muybridge's experiments, says:—"One might expect that the art of instantaneous photography would throw a good deal of light on certain problems of animal locomotion. It is known that Mr. Muybridge, of San Francisco, lately obtained a series of photographs of horses in various modes of progression (even in full gallop) and at various stages of the movements, with highly encouraging success. These experiments were made at the instance of Governor Stanford, to whom the idea occurred from reading Professor Marey's remarkable work on animal mechanism. We hear that Mr. Muybridge is about to develop and extend his experiments. With this view he has had constructed thirty cameras with electric screens. For photography of horses, these will be placed about one foot apart from each other. The experiments are to be commenced in May, and Mr. Muybridge proposes to fix all attitudes imaginable of athletes, of horses, of cattle, of dogs, and other animals in motion. Professor Marey lately suggested that the method should be applied in studying the flight of birds, and Mr. Muybridge intends modifying his apparatus for this purpose. Of course, this case presents special difficulties. We may state that a French captain, M. Vassel, has proposed in *La Nature* an apparently feasible way of realizing M. Marey's idea of a 'photographic gun' (so called) for fixing birds in their flight. The gun, which is fitted with Bertsch's automatic camera-

obscure, is actuated by means of a trigger, but this trigger, instead of the usual action, releases a rectangular sliding screen, which has a round aperture in the centre to let the light pass, while it intercepts it by its two extremities. Should it be desired to produce at one operation a series of successive attitudes, the construction of a 'photographic revolver' would offer no greater difficulty than the gun described."

THE PLACE OF MINIATURE IN ART.—At a meeting of the Society for the Encouragement of the Fine Arts, held on the 20th ult. at the Galleries, Conduit Street, Captain Mercier in the chair, a lecture was delivered by Mr. J. W. Bradley, on "The Place of Miniature in Art." The Chairman remarked, in opening the meeting, that Mr. Bradley (the lecturer) was an authority on the subject which he designed to treat that evening, he having travelled from Edinburgh to Naples—in fact, all through Europe—culling information on the subject in every part. The lecturer then proceeded to show that miniature was the mirror of art in all ages, and, of course, particularly so in the middle ages, when miniature painting was so much in vogue. He pointed out that where other monuments were wanting, miniature painting was itself the link which bound preceding and the succeeding styles of art. He enforced this by various examples, which he gave, and comparisons of manuscripts of different ages, with the existing monuments of those ages; the argument being that in some cases where there were no monuments, the manuscripts containing these miniatures might be trusted. By miniature painting he meant the illustrations which it was once so much the vogue to illuminate written books with. The art went back to the days of Cæsar, and began with the days of Varro, who died 23 B.C., and from that time for nineteen centuries the practice had been continued. Varro's portraits were multiplied by some mechanical process, afterwards lost. The ordinary idea of miniature was painting in little, but this was not the strict meaning of miniature, which really meant painting in minimum. A miniature could be grand just as a wall or a ceiling might be mean. Littleness was in point of stature, not in intelligence, and a miniature of the middle ages should be measured not by its dimensions, but by the ideas which it conveyed. A Bible was extant in Paris which contained several thousands of these glorious paintings, which was valued at £4,480, according to the price which each miniature would cost at the present day.—*Daily Chronicle*.

USED IN HIS BUSINESS.—*Funny Folks* says:—"Oh, those jurymen! An inquest was lately held on a poor photographer. A doctor explained that death had resulted from an effusion of serous fluid on the brain. A juror asked whether the fluid was one that the deceased used in his business, and, if so, whether it could have got into his system, and there proved fatal!"

CEMENT FOR GLASS.—Take 10½ lb. of pulverized stone and glass and mix with it 4½ lb. of sulphur. Subject the mixture to such a moderate degree of heat that the sulphur melts. Stir until the whole becomes homogeneous, and then run it into moulds. When required for use it is to be heated to 248°, at which temperature it melts, and may be employed in the usual manner. It resists the action of acids, never changes in the air, and is not affected in boiling water. At 235° it is said to be as hard as stone.—*Scientific American*.

To Correspondents.

TO AGENTS AND ADVERTISERS.—Next Friday being Good Friday, the *PHOTOGRAPHIC NEWS* will be published on Thursday, April 10th. Advertisers should send in their Announcements not later than Wednesday, the 9th.

F. H. D.—Mr. C. E. Elliott, of 36, Jewin Street, E.C., is the London Agent for Darlot. We do not remember his Paris address, but Mr. Elliott could doubtless supply it; or "Darlot, Optician, Paris," would probably find him.

ACETIC.—The gold toning bath becoming purple indicates that the gold is precipitated. This may arise from several causes, such as contact with a reducing agent, the action of light and heat. Warming the bath will decidedly contribute to such a result. Making the bath too strong will so contribute, and using seven grains of chloride of gold to forty ounces of water will give a solution somewhat strong for the purpose. A good bath for immediate use may be improvised by pouring boiling water on chloride of gold; but we should not think it would be a good keeping bath.

XX.—The stain on the print you enclose is caused by hypo. Probably caused by the use of a dish which had contained hypo for rinsing the unfixed print.

B. R. S.—So far as we know, artificial light has not been used to any great extent as an aid to daylight on dull days; but it has been used to some extent. Magnesium wire or ribbon has been found most useful in such cases. A small portion burnt—just sufficient to give brilliant points of light on the illuminated side of the face—is very valuable, and greatly improves the quality of a negative. In what is termed "Rembrandt" lighting it is especially useful.

R. M. D.—We prefer about ten ounces of water to one grain of chloride of gold. There is no advantage in a stronger solution. The acetate formula is as good as any. It was originally proposed by Mr. Hannaford.

R. G.—With a good English paper, no previous preparation was required before applying the collodio-chloride of silver; but with ordinary samples of photographic paper we found a sizing of arrow-root beneficial. A somewhat old and weak toning bath answered well. The bath of sulpho-cyanide of gold always pleases us best for toning collodio-chloride pictures. We first published the process in the winter of 1864, and read a paper before the Photographic Society in the spring of 1865.

F. F.—We cannot advise you as to the relative value of portrait photography and landscape photography as a matter of business. There is, of course, much greater demand for portraiture than landscape, and there is also a greater supply to meet the demand. Individual experience and observation are the most satisfactory guides.

B. J. M.—Want of vigour in the negative may result from many causes. A bad light, a slow lens, newly-mixed collodion, insufficient pyroxyline in the collodion, pouring on the developer so as to drive the free nitrate off the plate, and a variety of other causes will cause this defect. It is difficult to indicate the cause in operation in individual cases without a full knowledge of the circumstances. 2. A thin negative is best printed in a dull light. Printing in full sunlight will give a soft, flat image with many thin negatives which, printed in the shade, will give vigorous prints.

J. KAY.—Many thanks. The subject is interesting.

FREDERIC B.—We did not see your first communication until it was in print, being ill at the time. Our intimation was, however, intended for you, and if you call until you secure the intended audience, we think it may serve you. The *nom de plume* was that of an old correspondent, and he felt in danger of losing his identity; but there is no harm done.

G. A. S.—The pyroxyline which we have found best for preparing collodio-chloride of silver is made by using equal portions (by measure) of nitric acid sp. gr. 1.420, and sulphuric acid sp. gr. 1.840; in six measured ounces of the mixed acid place two drachms of fine clean cotton wool. The mixed acids should be brought to a temperature of 150 Fahr., and the cotton kept there ten minutes, kept moving all the time by means of a spatula, to ensure perfect action throughout all the cotton. This gives a collodion not too tough, nor too powdery. Use equal portions of sulphuric ether and alcohol at 82°.

HAACKMAN.—Many thanks. A detailed answer in our next.

W. H. M.—We have no doubt whatever that the yellow stains are due to hyposulphite of silver, but how brought there is the difficulty. Some of them have much the appearance of resulting from air-bells formed on the print whilst fixing, and so preventing the fixing solution from perfect action at the point where the bubble is formed. If you realize what takes place when a print is placed in the hypo bath, you will better understand the case. The first thing that happens on contact between the print and the fixing solution is a formation of hyposulphite of silver. This substance is not soluble in water, and is very unstable, quickly decomposing, and causing a yellow stain. It is soluble in a strong solution of hyposulphite of soda, and is, as a rule, dissolved in the fixing bath as soon as it is formed, the formation of a double hyposulphite of soda and silver being the result. This is soluble in water, and is removed by washing. The simple insoluble hyposulphite of silver once formed, and not redissolved at once by excess of hyposulphite of soda, cannot be dissolved or removed afterwards, and causes these yellow stains.

W. HALL.—We did not intend to put any unfair construction upon your letter; but in the interest of the art we felt it right to withhold from publication depreciatory remarks upon many able and liberal men who were doing their best to advance the art and to instruct their fellows without possible reward of any kind. We do not misappreciate your motive, but think you had not duly considered the question in all its bearings.

E. C. MURRAY.—The subject is an interesting and important one. In our next.

A SUBSCRIBER FROM THE FIRST NUMBER in our next.

J. L.—In our next.

Several correspondents in our next.

The Photographic News, April 10, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE IMPORTANCE OF PHOTOGRAPHIC RECORDS—OBERNETTER'S CHROMO-COLLOTYPE PROCESS—THE INFLUENCE OF AMATEURS.

The Importance of Photographic Records.—An excellent example of the use of photographic records was afforded the other day at a meeting of the Society of Naval Architects. The subject of building armoured men-of-war is once again being widely discussed, and the question is whether we are to have any more battle-ships of the masted broadside pattern, like the *Warrior* and our earlier ironclads, or whether the turret vessel is in future to be the only kind of protected ship. Our readers are probably aware that for several years no armoured ship of the first-class has been building in our dockyards, and those who possess faith in them are naturally growing indignant. At the same time, arguments which in past years proved delusive, and suggestions that have been tried and found wanting, are again being brought forward by those ignorant of the exhaustive trials already made at Shoeburyness, and but for the photographic records of these experiences the country would in all likelihood be asked to be at the expense of going through them once more. Fortunately, the War Department has a photographic establishment charged with the execution of records of this kind, among other work, and this department is enabled to bring forward the necessary proofs. We believe that the Woolwich Photographic Establishment, which, as our readers know, is under the charge of Mr. Baden Pritchard, has for many years past printed its work in permanent pigments, and, with the exception of Mr. Swan himself, was the earliest in this country to adopt for regular work the carbon process. Since 1869, when carbon work passed from the experimental to the practical stage in Mr. Pritchard's establishment, pigment prints have been annually produced in large numbers, and probably 100,000 impressions, for the most part of large dimensions, have been issued by the War Department to the several departments and officials entitled to receive the same. A branch of the Woolwich Establishment, consisting of a sergeant and gunner of the Royal Artillery, is stationed at Shoeburyness on purpose to be on the spot to photograph the results of experiments with guns and iron plates, and the records so secured are afterwards printed in carbon, and distributed, this work being done at Woolwich, where the negatives are stored. It was some of these pictures to which the attention of the Society of Naval Architects was recently called. The question whether the walls of a ship built in a certain manner, with armoured plates disposed after a particular plan, would suffice to keep out projectiles from heavy guns, was at once answered by a series of these War Department photographs. The various targets (each of which represents the side of a man-of-war) are shown first of all from the back, front, and side before it has been fired at, so that its construction may be thoroughly viewed, and afterwards we see the same target after it has been ill-treated, more or less, by projectiles. Photographs at once show how much damage has been done. Whether it is but a bolt sprung or a rivet fractured, or whether the shot has had the effect of letting the daylight through, the camera records the injury with the strictest impartiality. Everybody is ready to take the word of the camera, whether it is the constructor of the target, or the maker of the gun. The picture is as good as if the judges were looking at the target itself. It would be different if a draughtsman were employed; he might be prejudiced. Were he engaged by the inventor of the target, or the manufacturer

who had an interest in the character of the armour plates, he might always be suspected of subduing or ignoring injuries, or, on the other hand, the damage might be exaggerated. But photographic records executed in this straightforward way by Government officials are above suspicion, and it is certainly well that they are now produced in permanent pigments, that their value may thereby become enhanced.

Obernetter's Chromo-ColloTYPE Process.—Herr Obernetter has been experimenting, and with some success, apparently, for the purpose of doing in collotype printing what is done in chromo-lithography. We are glad to see that Herr Obernetter, in thus making known his process, has done so in a perfectly straightforward manner, and does not, like many others, talk about having accomplished the problem of "photographing in colours," a claim put forward by many who have done far less than he has in this direction. Herr Obernetter's effects are simply directed towards doing, as we have said, the lithographer in colour does. He gets his coloured picture by so many printings; he has as many lithographic stones as he has tints, and the finished impression is obtained as soon as the sheet of paper has been printed by every stone in the series. Herr Obernetter, instead of stones, employs several colloid films, from which he prints. These colloid plates are produced from negatives obtained from the original by his dusting-on process. In making these reproduced negatives, various degrees of exposure are given, according to circumstances. Thus a short exposure, and much working up with the plumbago, would furnish an almost black-and-white negative, and this, printed upon a colloid film, would permit of heavy colours being used, such as would be required to give very dark shadows; while, on the other hand, a delicate negative, produced by over-exposure and the use of very little plumbago, would yield a colloid plate to be employed for printing-off delicate colours. How many intermediate plates there should be, as well as the nature of the colours to be used, are matters, obviously, to be left to the discretion of the printer.

The Influence of Amateurs.—Great Britain has always led the way in the matter of dry plates and landscape photography, whatever may be said on the subject of portraiture. Whether it is that we have a larger body of amateurs in this country, or our own workers are more diligent, it is certain that progress in the matter of dry plates is due to British photographers. The gelatine emulsion process, originally brought forward by Messrs. Sayce and Bolton, has of late fallen into such good hands in this country, that we have secured dry films far more sensitive and trustworthy than any yet known. Both in Paris and Berlin, and, we believe, also in Vienna, gelatine emulsion plates as made in this country have been spoken of with much enthusiasm, and manufacturers in this country have been called upon to supply them abroad in goodly quantities. A year or two back it was impossible to obtain commercial dry plates on the Continent, except they came from this country, and it may still be the same, for aught we know. The reason for this is our large body of amateurs, many of the wealthy class, who are ever willing to make experiment and to further the art as much as possible. Our amateurs, indeed, have contributed in a vast degree to the recent processes, both of collodio-bromide and gelatino-bromide, while at the same time their number is so large that preparers of new plates always find a ready market for their wares. As our readers know, the Photographic Society of Great Britain has among its members a vast number of amateurs, the true professional element being altogether in the minority; whereas abroad the backbone of photographic societies are professional photographers. Again, it is well known that in this country manufacturers do a very large business with amateurs, for among well-to-do families dilettanti photographers are very frequently met with indeed.

Correspondence.

STATUS OF PHOTOGRAPHERS.

DEAR SIR,—After an experience of nearly twenty years, I cannot think that photographic assistants ought to be thought so lightly of as in your foot-note to A. S. Watson. Taking the number that are employed, and the number of easels that have been reported in the *PHOTOGRAPHIC NEWS* since its commencement, I think they will compare favourably with any other class with the same amount of remuneration.

I most cordially agree with A. S. W. that your correspondent of twenty-two years' experience is very much to be pitied. As regards being ungrateful or dishonest, perhaps having a notion of commencing in business for himself is considered being ungrateful; and then as to dishonesty, why I can name three assistants of one employer, who can bear me out, that because it got in their employer's head that they were about to commence for themselves, he did his utmost to bring them in as dishonest without the slightest shadow of a cause; so that employers themselves are not blameless. This case I can vouch for the correctness of. Only one out of the three was intending to commence business, and all the three were in succession.

I am an employer myself, and have been for some years, but was formerly an assistant, so that I could not resist addressing myself to you in defence of my late fellow-assistants, knowing the case I quote, and its correctness. A SUBSCRIBER FROM THE FIRST NUMBER.

PS.—When I mention assistants, I do not allude to glass positive workers from the watering-place, who often give one a call at the close of their season.

[We quite agree with our correspondent that the status of photographers ought not to be so low as by some it is held to be. As a profession, photography requires exceptional skill and intelligence, and should stand high. All photographers are concerned in maintaining, personally and collectively, the legitimate status of the profession.—ED.]

REVERSED NEGATIVES.

DEAR SIR,—In the *NEWS* of the 21st ult. Mr. Dallas states that in 1863 he was the first to suggest the method of reversing the sensitized glass plate to produce reversed negatives.

The method was described in the *Photographic Journal* of October 21st, 1856, by Mr. Worden, Newcastle, for the production of non-reversed glass positives. I took a number of non-reversed positives about that time, and the only care required was to rub the glass dry with tissue paper, and push in the lens the thickness of the glass.

J. L.

HOW TO BUILD A CHEAP AND EFFICIENT STUDIO.

DEAR SIR,—Permit me to thank Mr. Bridge (and yourself) for pointing out the insecurity of the "bridge" I erected for the safe passage of the "cheap studio question." At the time I built mine (I put up two, one side light, and one of the tunnel pattern, to give them both a fair trial), I was residing some five or six miles from Manchester, and just, as I believe, outside of several "boundaries." At all events, I was never troubled in the manner suggested, and I must candidly confess that I omitted the view of the question entirely. Since then, however, I have removed to a Yorkshire "linen" town, and find my "linen," *alias* my "shirt," is pretty considerably out at the "shifts." I am put to to circumvent

those public luminaries ye Borough Surveyors, Sanitary Inspectors, &c., in the matter of a small cottage I contemplate building, and in which I want to "fix" a room in the clouds with sufficient light to continue my "necromantic" experiments, and I can, therefore, thoroughly appreciate the difficulty. However, it seems to me that by making the "wooden" part of iron (galvanised and corrugated), we may get over the aforesaid individuals after the proper deposit of plans, notices, &c., &c., and the expenditure of a little red tapified circumlocution; and as I very nearly might have led some of our friends into a mess, I will, if desired, prepare and send you designs or estimates of such, seeing that I dabble somewhat in most trades, and very often "burn my fingers." My last "burn," however, I saw-sawed-in in the end of my right forefinger (before I had time to see where I put it) with a little circular saw I had just fitted, with an idea of making a very simple camera-back, &c., and this "split" has for the present so damaged my working powers that I feel constrained to apologise for the trouble I am about to cause yourself and compositors in reading this scrawl.—Yours particularly,

RICHARD PARR.

[We shall be glad to see the designs in question. It may be important to mention that whilst corrugated iron would meet the spirit of the Building Acts generally, it would not meet the letter in which brick or stone of a given thickness is mentioned. Hence the importance of consulting and "getting over" the District Surveyor.—ED.]

DANGEROUS PRACTICE.

DEAR SIR,—Pray allow me to warn your readers not to attempt to heat alcohol by putting it in a "Winchester," and standing it upon a hob, as recommended by Mr. Kay in the current number of the *PHOTOGRAPHIC NEWS*. Although that gentleman may have done what he mentions with impunity, he is to be considered extremely fortunate in having escaped a serious accident. Were the bottle to break whilst on the hob (which it is most likely to do), and three pints of alcohol find its way to the fire, it were only natural to expect most disastrous results.

The safest plan for heating alcohol is to place the bottle containing it in a large saucepan or other convenient vessel, containing water slightly warm in the first instance, and, after about five minutes, changing the water for some of a higher temperature; repeating the change of water, each time rather hotter, until the alcohol is sufficiently heated. There should be room in the bottle to allow for the expansion of the spirit, and the stopper should be kept out during the process.

The methylated alcohol usually sold *boils* at about 175°F., far below the boiling point of water.—Yours, &c.,

R. PEARSON.

COULD A WINTER'S LIGHT BE ARTIFICIALLY PRODUCED?

DEAR SIR,—Many of your readers will doubtless say we have had enough of that kind of light already. Very true, if it is the wet process they are working; but can the same be said by those using the bromo-gelatine plates? From what I have been able to gather, it is, I think, to say the least, doubtful.

When we remember, first, that portraits have been taken on dull days in winter, when it would have been madness to have made the attempt by the wet process; secondly, that the exposure required for gelatine plates does not appear to decrease in anything like the same ratio in which the light increases, it is, I think, a question well worth a little consideration. Not only this, but it was stated in these columns that the same kind of plate actually worked slower in a bright than it did in a dull light. If, then, this

be a fact, or even if we cannot get the extra rapidity we would naturally or theoretically expect when we have an extra amount of light, there must be a screw loose somewhere; and I think it would be well for those working the process to try and find the true cause, and, if possible, a remedy for this photographic paradox, if I may coin the word. If it is only fancy, let it be proved so; but if otherwise, let us try to do something to utilize the extra light which would be, in that case, lost.

Mr. H. Cooper says (see *PHOTOGRAPHIC NEWS*, Jan. 24) that the newest and most sensitive gelatine plates which, in a good light, may be five times as sensitive as a good average wet plate, require in a dull light an exposure of only one-thirtieth or less what the wet plate would need. Here Mr. Cooper gives an effect: what can be the cause?

Capt. Abney says (see *PHOTOGRAPHIC NEWS* for March 21):—"Now, with the gelatine plates, the yellow rays were of actinic use, hence the value of these plates in winter; but when the summer came, he did not think there would be that remarkable difference between the two which some anticipated." Capt. Abney gives us a cause. Yellow rays, then, are of actinic use; or, at all events, the blue are, according to this, of secondary importance.

Now, the question I would ask is, if a different kind of light is really required for bromo-gelatine plates, does the intensity of such light remain stationary, while that useful for wet plates increases; or is there the same increase in both? If the former, why is it not always possible (other things being equal) to get negatives with the same exposure? And if the latter, have we not still more reason for thinking we ought not only to get them with the same exposure, but with less; i.e., if the light is (say) thirty times as strong now as it was in the winter months when wet plates were nowhere, is it proved in practice that we can give thirty times less exposure and get the same result? It seems to me something like a man putting more money in his pocket, the said pocket having a hole in the bottom; but he can't fill it—the hole neutralizes the effect the extra money would have. Would it be saying too much to say the extra blue rays neutralize the effect we would naturally expect from the extra yellow rays which Captain Abney says are of actinic use?

Leaving out of the question for the moment what Mr. Cooper has said, we cannot be blind to the fact that in the race for rapidity the distance between the exposures required for wet plates and that wanted for gelatine is far less now than it was (say) in December; or, in other words, gelatine plates are not so far ahead of the others as they were.

Let it be given, then, that the yellow rays are the principal ones which do the work in winter. Surely we get more of those rays now? As I understand it, white light is made up of or contains all the colours of the solar spectrum; that if any colour were absent, the light would not be so pure and white; therefore there must, I think, be more yellow rays in the light we get now, or it would not be so white, as there are now extra blue rays. But the fact stares us in the face that the gelatine plates do not increase in rapidity in anything the same ratio as those prepared by the wet process. Is it because in winter the light is filtered through a yellow atmosphere which only allows the gelatine plate light to pass, that exposures are comparatively quicker? And, as I said before, when we do not get a proportionate amount of work done by the extra yellow light, is it because the extra blue rays we also get neutralize the peculiar light, or rather neutralize the effect such light would have upon the bromide films? If this is so, my idea is to keep back the light which is not only useless, but may be a hindrance, by colouring the glazed portion of the studio with a suitable varnish, so that the light on reaching the sitter would have been filtered through a kind of yellow glass, instead of (as in winter) through a yellow atmosphere. If the extra blue rays really do interfere, I think my suggestion of altering the colour of the light in the studio will prove a cure. Or

it might be managed easier by placing some coloured medium in or near the camera, so that the light reaching the gelatine film would have been filtered from the light not required for these plates, and which may do more harm than good by preventing the whole of the yellow rays from acting upon the plates. If, however, it can be shown that in practice the rapidity increases in the same proportion as the light, I, in common with others, will be only too glad to find our fears were groundless; for I take it that the shorter the exposure, the better both for photographers and their patrons.—Yours truly,
E. C. MURRAY.

THE USE OF DRY PLATES IN THE STUDIO.

DEAR SIR,—I am glad to find that Mr. William Green, of Berwick-on-Tweed, has been drawn into the ranks of those who are willing to give to others the benefit of their experience. This will afford me the opportunity of doing justice to Mr. Green. Some of the first dry plates showed signs of frilling, and it is to Mr. Green's suggestion that we owed the remedy. This letter is valuable also, because he gives us further evidence of his experience. It will prove useful information to many that, with well prepared dry plates, the alum solution can be dispensed with. Reduced to the two simple operations of developing and fixing, I have no hesitation in supplementing other statements made previously on this subject, and in saying that dry-plate work is not only much simpler, but also much easier than the old method.

It is gratifying to find that other statements are endorsed by an artist who has had nearly twenty years' practice. Mr. William Green uses the ferrous oxalate developer, and he must be well satisfied with its properties, since he is bold enough to say that he can obtain results far superior to what he did with the old process, his long experience of the latter notwithstanding. I am happy to be able to corroborate every word of this, and other assertions made by Mr. Green; and I wish further to do him the justice of stating that I believe him to have been the first to abandon the silver bath altogether. Mr. Green will not object to find his legitimate claim so frankly recognised. All new problems, and their successful working out, must be the source of satisfaction to those who will be at the pains of studying them, and they are often rewarded by almost unlooked-for results; I believe it to be the case with the use of dry plates in the studio.

In the matter of new ideas and new modes of working, which would seem to be very distasteful to the "stand-still" or "rest-and-be-thankful mind," I may be permitted to state how the workers of the chromotype process were sometimes met by those who shrugged their shoulders and expressed themselves so opposed to all those new-fangled ideas. So it must have been when first collodion was spoken of, and many other things of daily and indispensable use. We know that time, which tries all things, even dry-plates, always settles all questions by its inexorable laws; but for all that, there are minds which will investigate the new, although it may sometimes prove unprofitable.

We have had nearly six months of a most severe and especially dark winter, which must have taxed the equanimity and ingenuity of many members of our profession. Necessity, always the kind mother of invention, has suggested artificial light to some, and others have thought of quick dry plates, not caring to turn night into day. These are things for which most must be thankful, and should have experienced a certain amount of pride at finding that photography was not to be entirely baffled in its efforts. Both artificial light and emulsion plates are within the reach of all; no patents stand in the way of their use; but both require the expenditure of a little time and study.

These valuable additions to our knowledge considerably increase our means of locomotion in these fast days of telephones, microphones, and photophones. It must be a pleasing reflection for the follower of the camera to find that his art-science, which has been described as the most wonderful

invention of the age, has in store so many bright and interesting marvels, and it is to be hoped that they will not prove too dazzling.

Before stating that I remain as one always does at the bottom of a letter, may I express the hope, Mr. Editor, that Mr. Green's example will be followed by some more of our friends?—Yours, &c.,
C. FERRANTI.

PORTRAITS BY GASLIGHT.

DEAR SIR,—As photography by artificial light is just now on the *tapis*, I availed myself on Thursday night last of an opportunity of trying the actinic properties of coal-gas upon a wet plate. The occasion referred to was the exhibition, in the Art Gallery of this town, of a number of gas-burners by Wigham, Sugg, Bray, and others. The light I chose was Wigham's, consisting of 28 burners, and described as giving a light equal to 400 candles. My first plate was exposed upon a statuette; but as the light was erected upon a pillar some 10 feet high, I had not, of course, much power in the use of reflectors, nor could I place the figure in the best situation. However, as my object was to ascertain the actinic power of the light, it answered the purpose. The exposure was eight minutes. As all concerned in the exhibition were by this time very much interested in my experiments, and aided me by lowering the position of the light to about 5 feet from the ground, I determined upon trying a portrait from life, and by the use of powerful reflectors I so threw and dispersed the light that I not only obtained good modelling, but reduced the exposure to four minutes. Prints from each negative I submit to you. I used the wet process in the best and most sensitive condition known to me.

In regard to the cost of the gas consumed by this burner, it is very trifling—something less than twopenny an hour—so that whilst an exposure of four minutes is of course practically out of the question for portraiture, yet by using more burners a rapid exposure might be obtained with little expense.—I am, sir, yours truly,
P. M. LAWS.

ARTIFICIAL LIGHTING.

SIR,—I must really take exception to the paradoxical letter of Mr. Vincent Hatch in your last week's journal. He is adverse to the introduction of artificial lighting, inasmuch that it is a degradation to the art of photography, and is profuse in his allusions to a "respectable high-class business," "first-class photographer," "art portraiture," "legitimate work," &c. Is it really "legitimate work," and consistent with any "respectable high-class business," to practise any of the series of ingenious little devices which Mr. Vincent Hatch advises as the means of what he terms "hooking a customer"? He is surely a greater adept than myself if he can by any means "secure a deposit" from his customers; and as to "showing them a positive," do I again pervert the meaning of Mr. Vincent Hatch when I say that I have never yet had occasion to take *glass pictures* for my customers, or to resort to the so-called *positive work*? I am, moreover, convinced by his letter that there is something in a "photographic portrait business" far more degrading than "taking portraits by artificial light."—I am, sir, yours truly,
R. V. HARMAN.

SIR,—At the meeting of the South London Society on Thursday last, in the discussion on "artificial lighting," an interesting anecdote was related by Mr. Jabez Hughes, who said that many years ago he had been photographed by artificial light while at some meeting, and his portrait was immediately thrown upon the screen by the magic lantern. Mr. Hughes must have felt excessively flattered with the diabolical representation of his good-humoured and smiling countenance. We do that kind of thing now with the aid of a transparency, and the effect is considered somewhat better.—Yours,
R.

ARTIFICIAL LIGHT.

BY A. CLARKE.*

If the learned Dr. Drinkwater had to apologise on the subject of artificial light, how much more ought we to do so, especially as now the various members of the profession have enjoyed the privilege of reading his and Mr. Harman's papers on the subject? Fortunately for us, the "title" that our mutual friend, the Secretary, has chosen for this paper is a very wide one, and to begin at an early date, we find the first instance of a light other than the sun and moon about 1,900 B.C. (Gen. xv.).

We, who are so highly favoured in respect to artificial light, find described in novels of so late a date as those by Charles Dickens full descriptions of that "imp," the link boy; while in Russell and other kindred squares close by are still to be found the extinguishers used for putting out the links. Who has not read of the old watchmen, familiarly called "Charlies," with their horse lanterns?

These two instances will suffice to illustrate the progress made in artificial lighting during the last forty or fifty years; and when we contrast modern civilization with the above two pictures, or with the uncivilized life of our forefathers, we must own that all the arts which minister to our wants and conveniences we owe to inventors. But for them we should still paddle in canoes, paint ourselves blue, and so—as *Punch* says—promenade the parks. We should cover our floors with rushes, and go to war armed only with bow and arrow. And as for travelling, it certainly would not be with the speed of the "Flying Dutchman," or the convenience of the underground railway. It was left for Winsor to utilise coal gas for illuminating purposes, and it is recorded that he worried the town for three winters before he could attract any serious attention to his views.

The subject of artificial light for photographic purposes has of late received much attention, although there appears to be great difference of opinion as to the advisability of its use, even while admitting its perfect success in the way it has lately been employed. Some persons object on the score that it would unduly lengthen the hours of labour, and that photographers have enough to contend with in their daily struggles during the usual hours without having to work after dark. But its employment at night is only one of its uses, though a very important one, as in cases of which I shall speak presently. The importance, however, of having an apparatus capable of giving perfect results always ready to hand places in the hands of the photographer the power to take pictures whenever he chooses, irrespective of weather, and the importance of this application can scarcely be overrated. Certain it is that there are numbers who have been much pleased with the means which has enabled them during the late dull season to have abundance of work to do, and who would not willingly now be without such a valuable adjunct to the studio; and it is useless for people to object to the introduction of any appliance which puts a new power into the hands of photographers, and conduces to their convenience and benefit, simply because it may be abused by some.

A great deal has been written on the subject of artificial light lately, and in some cases by persons evidently with little practical knowledge, who seem to possess the art of creating shadows and lending existence to what does not exist. One writer, who judiciously conceals his name, and uses a *non de plume*, says, in last week's NEWS, that the characteristics of all the portraits he has seen taken by artificial light are "unnatural and waxy skin, glassy

* Read before the South London Photographic Society.

eyes, false and reflected lights, black shadows, and the entire appearance very supernatural and corpse-like." He says at the commencement of his letter that he is in the habit of perusing the NEWS, therefore he might at least have supposed that it was a different class of picture to what he describes of which the Editor says—"There is nothing to distinguish them from ordinary good work by daylight." The same writer also says that taking the cheaper method than the electric light, viz., the luxograph, it will run the photographer to £40 or £50, and that it will take many sitters to reimburse that outlay. Practical men have found that they have cleared the cost in little more than a week, and in one case I have to speak of this evening, the probability is that the cost will be cleared by the one evening's work, and those must unquestionably do good service to photographers who point out and practically demonstrate new departures from the usual routine. To one of these "new departures" it is my desire to call your attention, and it has the recommendation of being a very profitable one; for, while giving one's attention to its photographic and artistic aspect, the satisfactory character of its pecuniary phase is not to be despised, even by those who object to working "after the usual hours." The hours during which a series of about 120 full-length cabinet pictures can be taken at a fancy dress ball are certainly very unusual, though they scarcely come under the condemnation of those who object to working in the evening, as the greater number are taken during the earliest hours of the morning.

The firm to which I belong has now had sufficient practical experience to be enabled to speak decidedly on the success of what, until lately, was only a matter of speculation, namely, the possibility of taking the apparatus and using it in an apartment adjoining a ball-room, and of taking a large number of pictures while the ball proceeds. I imagine that few will dispute as to whether this use of artificial light is not both a gain and a convenience in every way—not only to the sitters themselves, who are spared the trouble of dressing and going to the studio (which often prevents many from being photographed who would otherwise do so), but also to the photographer, who thus secures a large number of sitters, and adds considerably to his celebrity.

Our experience shows that the greater portion of the company on the occasion of a ball in fancy costume gladly availed themselves of the opportunity of being photographed when it is unattended with the usual trouble involved in dressing purposely. By the plan which we pursued in taking the pictures on the first occasion at Chelsea (and which has again been most successfully carried out last week on a similar occasion), we were enabled to take about 120 half-plate negatives in about six hours, this giving an average of three minutes for each sitter.

Of course it would have been impossible to do this by the wet process. The plates we used are known as the "London gelatine emulsion," and were in every way satisfactory. We used a changing-box holding twelve plates. One person posed and arranged the sitter, another assistant being at the camera to focus and remove the dark slide to another, who changed the plate while the next sitter was arranged, and the Luxograph, by which instrument they were lighted, was attended to by a youth. In this way everything went on with the greatest smoothness and celerity, and from the extreme rapidity of the plates, which only required three to five seconds' exposure, there was little chance of any sitter moving, and all were much pleased at the rapidity and novelty of the affair. I have brought a number of the pictures for your inspection. I should state that only a plain background was used, the fancy backgrounds being added by double printing, as there would have been no time to change the backgrounds.

I have not thought it necessary to say anything re-

specting the development, &c., of the plates, as such ample information has been given by Mr. Bennett and by Messrs. Wratten and Wainwright, who manufactured the plates we used; but I trust I have said sufficient to show photographers that there is a field open for them on similar occasions to the one I have described, and also at many large public and private gatherings, such as bazaars, coming of age, &c.

The Luxograph is easily placed in a drawing-room at any convenient spot, and there is not the slightest smell, fumes, or any inconvenience arising from its use; so that on occasions where many sitters would be photographed were it not for the trouble of going to the studio, the best way, both for their pleasure and convenience and the photographer's profit, is to take the studio to them.

Before concluding, we draw your attention to the main advantages to photographers of the two systems now patented, viz., the Vanderweyde and Luxograph. Neither requires a secondary light, but both give perfect results in lighting the sitter, and there are no black shadows to be overcome. We consider, and justly so, that our system gives equally as good results as the electric light, and at a very much less cost.

The ease and simplicity with which a picture can be obtained, either with a wet or dry plate, is something delightful. Dr. Drinkwater says, in his paper lately published:—

"I find that the electric light is far from constant. I have seen most of the methods in use, and they all flicker in a marked degree. The light is sometimes strong and it suddenly becomes weak—at one time white, another red, and on more than one occasion I have seen it, after changing from white to all the colours of the spectrum, resolve itself into darkness and refuse to emit light at all."

Respecting the electric light our experience has been considerable, and we have had unusual opportunities of ascertaining what is necessary for its successful use in portraiture. For this purpose photographers must recollect that the bare light is of no use whatever, but must be used by the Vanderweyde or other systems. Various writers have put down the cost necessary for the above at about £200 to £700; but it will be found that the largest cost will be entailed if satisfactory apparatus is to be purchased.

A great deal has been said respecting battery power, but at present it is of no practical use for portraiture. The light is to all appearance actinic and brilliant, but the result on a plate is most disappointing, even with two minutes' exposure, with everything not only in first-class order, but with the best of apparatus. Even should important improvements render a battery available, few would care to go through the trouble and mess entailed in filling and emptying the cells, especially on a cold winter's night, with a good north-east wind blowing, for the battery must be kept out of doors on account of the fumes.

I believe that I am not out of order in saying that the author of the preceding paper can say something about the use of batteries. The albo-carbon we have not seen, but we were lately informed by a photographer of experience who has used it that it is of no practical use for portraiture. We are convinced that the pyrotechnic light, used in a suitable manner, is the most actinic form of artificial light available for portraiture, and we find the exposure required by the luxograph seldom exceeds fifteen seconds for a perfectly exposed negative, while the cost of the compound is so small as to be of little consideration, being about 2½d. or 3d. with the usual wet process, and under 1d. when rapid gelatine plates are used.

ASBESTOS POWDER AS A CEMENT.—Asbestos powder made into a thick paste with the liquid silicate of soda is stated to be found of great advantage for making joints, fitting taps, connecting pipes, and filling cracks in retorts.

The Photographic News.

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A PHOTOGRAPHIC PARADOX.

A CORRESPONDENT, whose letter appears on another page, asks a question which at first sight will probably cause a smile. Mr. Murray asks, Is it possible to create a winter light artificially? In short, Is it possible, in the bright light of summer, to reduce the studio to the murky conditions of (say) November? Odd as the question appears, it seems to arise very naturally out of a consideration of the subject discussed in his letter. The common experience of workers with rapid gelatine plates points to one very singular fact, namely, that these plates are relatively much more sensitive in a dull light than in a bright light. To take the illustration given in a communication by Mr. Cooper, if a gelatine plate exposed in a bright light require only one-fifth of the time required by a wet collodion plate, the same plate would in a dull light require only one-thirtieth of the time required by wet collodion. This is startling enough, and the more so that it is opposed to old dry plate experience. It used to be an axiom that dry plates were almost useless in a very dull light, being singularly insensitive to weak radiations. When Dr. Hill Norris issued his rapid dry plates, which were in their day a marvel of sensitiveness, he cautioned photographers that it was useless to expose them in dull foggy weather, as they appeared to be almost insensitive to dull yellow light; whilst it is in just such light that gelatine plates "come out strong," as Mark Tapley would have it. But if dull yellow light answer best for these plates, shall we, and can we, create such conditions in summer? is very naturally asked. Or, as some will put the question, are gelatine plates actually more sensitive to yellow light, or are they only relatively so? As the gelatine plate gradually loses its superiority over the wet collodion as the light grows brighter, is there a point at which the wet plate will equal or surpass its dry competitor? We do not intend to discuss the subject here, nor to offer an *ex cathedra* answer, otherwise we should say it was purely a question of relation, and that the gelatine which always retain its lead.

We put the question as our correspondent has raised it, and shall be happy to receive the views of men of experience on the subject. At any rate, it suggests to experimental photographers who have wisely adopted the use of gelatine that it will be wise to avoid being too hasty in throwing away baths, &c., which may prove useful in summer.

PHOTOGRAPHED NOTORIETIES.

SOON after the advent of the carte-de-visite mania, something under twenty years ago, a vigorous writer made the remark that photography—or, rather, the phase of it then

under notice—had created a new passion in the human breast, the passion for seeing or possessing the image in little of everyone who possessed the remotest possible claim to celebrity, popularity, or notoriety. That passion has been steadily growing. All that was beautiful or noble having furnished food for the camera, that which was repulsive was next made to contribute to this new form of iconolatry! The grand head of a philosopher or poet gave place to the hideous repulsiveness of a Pease!

At once attractive, interesting, and instructive, the extensive circulation of portraits of distinguished persons has certainly had an educational value. As some have alleged, the education has been of a democratic nature, for certainly photography is a great leveller. It has been found by the vulgar many that kings, queens, and princes are very common-place looking persons, often excelled in physical charms by the most humble citizens; but still the general effect was of a civilizing nature, and beneficent in its influence. Occasionally there have been outcries against the publicity and popularity given to some fair anonyma by the extensive circulation of a charming portrait, or protests from some against décolleté portrait of some burlesque actress; but, as a rule, photography, considering circumstances, has been marvellously free from vulgarity or offence against good taste. A protest in a contemporary calls attention, however, to a form of offence which deserves some consideration. A well-known graceful essayist in the *Sunday Times* says:—"The Zulu war is bad enough, but it cannot be helped; but why we should have Indian photographs of ungainly Zulus, almost in a state of nudity, exhibited in our shop windows, it is impossible to say. If these had been photographs of well-formed English people, I imagine some one would have immediately interfered to prevent their being shown."

We must confess the same question has often occurred to our own mind. Why coarse and nasty nudities of repulsively low specimens of humanity should, because of some ethnological interest, be tolerated as decent, when similar portrayals divine of a beautiful and graceful person would be regarded as a fit subject for the attention of a society to repress vice, we cannot understand. By all means we should let the law interfere to repress everything naturally repugnant to the spirit of decent society, but there should be consistency in such action. We fear, however, that the real evil is in the morbid taste of the public which makes a possible market of ugly nakedness. It is the demand which creates the supply, and so long as some portion of the public require offensive portraits of half-clad savages, they will be supplied. We do not see any remedy; but we confess we wish photography were not responsible for some of these breaches of good taste.

PORTRAITS BY GASLIGHT.

WE print a letter on another page, in which the possibility of an altogether novel form of artificial light for portraiture is pointed out. Mr. P. M. Laws, a portraitist of Newcastle-upon-Tyne, has been producing portrait negatives by the light of ordinary coal gas, the same which is used in street illumination, and with a degree of success which is marvellous. An exhibition of various ingenious gas burners, by skilful gas engineers, was held in the Art Gallery at Newcastle recently, and Mr. Laws availed himself of the opportunity to test the actinic value of gas. The light selected for trial was Wigham's, consisting of twenty-eight burners, and giving a light equal to four hundred candles. A wet plate was exposed upon a statuette, and, with an exposure of eight minutes, gave a good negative. But the position of the light was unfavourable for the photographic illumination of an object; and this having been remedied, Mr. Laws ventured on the exposure of a living sitter, the lowered position of the

light permitting the satisfactory use of reflectors. The exposure given was this time four minutes, and the result was very satisfactory. We have a print from the negative before us; the lighting is good, and the modelling excellent, nothing in any way suggesting the production by artificial light.

The cost of gas consumed is practically nominal, being at the rate of twopenney per hour. What the first cost of the burner and fittings was we cannot say, but probably not very heavy. As almost every studio has gas in its immediate proximity, the cost of fixing the special burner, and using gas occasionally, cannot be very serious, and it involves no special inconvenience of any kind. Those who do not wish to enter upon night photography may find such an additional appliance a valuable supplement to the dull light of a November afternoon.

As Mr. Laws very aptly remarks, an exposure of four minutes is out of the question for ordinary portraiture, but an increased number of burners would reduce the time. Further, Mr. Laws used the wet process, which, according to daily increasing testimony, is many times slower—especially in comparatively dull light—than the rapid gelatine emulsion plates. It is quite possible that where the wet collodion plate required four minutes, a dry gelatine plate might have required less than one minute—might, in fact, have brought the exposure within fairly practical limits. We hope that these experiments will be followed up, as from the excellence of the first examples we are satisfied that results of practical value may be obtained with less inconvenience than is possible by most kinds of artificial lighting.

FRENCH CORRESPONDENCE.

LECTURES ON PHOTOGRAPHY AT VARIOUS INSTITUTIONS IN PARIS—NEW WORK BY M. RADAU ON THE APPLICATION OF PHOTOGRAPHY TO SCIENCE—CONDUCT OF THE MONITEUR DE LA PHOTOGRAPHIE UNDERTAKEN BY M. LEON VIDAL.

Lectures on Photography in Paris.—Public opinion in Paris appears lately to have taken a turn in favour of the spread of, and (what is still better) of education in, photography. This may be taken as a good augury for the science—at length permitted to count as such, and to emerge with honour from the state of disrepute in which endeavours have persistently been made to keep it from its very start into existence up to the present. The reasons for this discredit are not far to seek, provided that we keep out of sight the rapidity with which photographic progress has taken place, and the discoveries which, though made by a few investigators only, have received that knowledge of a general kind belonging to the whole sphere of science. In the first place, there is no doubt that photography, marvellous as were the effects produced, was considered to be merely an application of well-known physical and chemical facts, but no important or practical conclusions were drawn from its results. When saying this, I must be understood to speak generally, for there certainly were among the forerunners in our art those who foresaw, and were bold enough to foretell, its development as we see it to-day. On the other hand, from the art point of view, though doubtless photography was accepted as a useful auxiliary to the fine arts, there were many who were so ill-advised as to go much in advance of the truth, and to consider it as a dangerous rival of the arts of drawing and engraving. "It's all up with art!" was a common expression with men frightened out of their wits at the bare possibility of arresting in motion and fixing a reflected image. Now we have turned our backs on these exaggerated fears, for they were merely the effects of sudden surprise; and we are able calmly to take the measure of what photography is able to accomplish. Very little reflection helps us to appreciate the immense services that photography can render—or, better still, is always rendering—to art to science,

and to manufactures, nor can we discover that in any way it is injurious to either of them. These truths, well known as they may be to the initiated among us, have still to be demonstrated to the world at large, and on this account we note with pleasure the efforts, worthy of all praise, that are being made to show to the public photography in its true form—the docile handmaiden, not the rival, of art and of science. To this current of popular opinion, increasing, as it does, in strength from day to day, is due the enterprise undertaken by the Scientific Association of France, who have appealed to our esteemed fellow-worker, M. A. Davanne, to deliver a lecture at the Sorbonne on the history of photography from its origin to its present state of development. Never hitherto has this temple of science been opened for the service of photography, and therefore the occasion referred to—Thursday, the 20th of March last—may be well regarded as an important epoch in the life of the newly-recognized science. Let me say at once that M. Davanne was perfectly equal to the difficult task he had undertaken; I have no hesitation in asserting this, notwithstanding the short time he could give up for preparation, and the immensity of the ground over which he had to travel. His object, as will be easily seen, was not to give technical instruction in photography, but only to follow step by step its march of progress, to show of what importance it is, and how numerous and valuable are the applications to which it lends itself. Possessed of great lucidity of style, and long experience in the art of experimenting, established, moreover, on ground which he had often traversed, and with which he was, therefore, perfectly familiar, M. Davanne succeeded in arousing the enthusiasm of his audience—and this is no small praise, for that audience was composed almost entirely of scientific men, among them some very distinguished ones; yet all, fascinated and surprised by what they have heard and seen, exclaimed with one accord—"What a beautiful thing is photography!" Nothing, moreover, had been omitted to further the objects of the learned lecturer: a series of admirably-managed experiments permitted him to demonstrate every argument that he employed, and to illustrate each phenomenon that he mentioned. Negatives were produced before the eyes of all present. He was able to prove the enormous sensitiveness of iodised collodions and of emulsions, though the meeting was held at half-past eight at night. By the aid of a yellow light ingeniously concentrated on the spot where plates were sensitized, and sensitive bodies were operated on while the rest of the hall was wrapped in profound darkness, he permitted the listeners to follow the minutest details; and finally, by means of a white light (that of magnesium was employed), he convinced them that a simple and extremely short exposure is sufficient to produce an intense image on the surface of a sensitive film. All the principal processes for taking positive prints were experimentally illustrated before the delighted audience. Among these were carbon prints obtained on different coloured tissues by the method of M. Chardon, of whose personal and efficient assistance M. Davanne availed himself on the occasion. Woodbury-types were worked in presses of the establishment of Leunercier and Co.; phototypes were pressed with fatty ink rollers by a couple of assistants of M. Berthaud; specimens of *Heliogravure* by the process of M. Rousselon, of *Heliocromie* by those of MM. Cros and Duos-de-Mauron, of *Photochromie* by M. Leon Vidal, were shown in succession to illustrate the descriptions given by the lecturer. The numberless applications of photography to general science and to the arts, its use to the criminal police, its services in microscopic science, geography, ethnology, and astronomy, and its employment for the restoration of ancient manuscripts, were all rapidly passed in review, and the illustrations in turn were projected on the screen by the oxy-hydrogen light under the care of M. Molteni. The success of the lecture in general was unqualified, and the audience testified by continually renewed applause to

he satisfaction they had derived from it. It was felt that a new era would henceforth be open to photography, for its right to be admitted among the classified sciences had now been fully proved. Of that success M. Davanne may be most justly proud. That he anticipated great results was proved by his closing words, in which he expressed his regret that nowhere was there an opportunity for any one to receive instruction in all the beautiful things he had been showing. Photography, he said, is a noble science, but it is neglected because there is no technical instruction in it. In this he was perfectly right, but he probably forgot what is at present being done at the National School of the Decorative Arts, where this very session a course of instruction has been organized in reproductions of works of art for the manufacturing industries, and in this course, as may be imagined, photography will have a prominent place. To the intelligent and amiable director of this art school, M. Louvier de Lajolais, is due the realization of this idea, which will be found to meet fully the wants of technical instruction in photography. A similar scheme, no doubt, M. Davanne would like to see carried out in all the schools where instruction is given in applied science. Anything in praise of the course above-mentioned cannot be stated in this letter, whose writer is himself in charge of it. It is scarcely becoming to eulogise oneself, but I may be allowed to express an opinion that the example set by this important school of art cannot fail of being a fertile one. As a proof, we have the assiduity with which the lessons are attended, and the petition presented by the director to the Minister of Public Instruction that instruction of this kind may be introduced into the training institution. I am not aware of what is being done in England in this direction, and it may be that you are much further advanced in the path of instruction in the art of reproduction founded on the discoveries of photography and electrotyping; but in France we have still all to do under this head, and the reason why I insist so strongly on the favourable movement which, to the honour of photography, is just now taking place, is that all my fellow-labourers in other countries, where they may be afflicted with a similar need, may be encouraged to pursue the same path of progress. The first course professed at the National School of the Decorative Arts will also be the subject of a special work to be published for introduction into Fine Art education at the universities. In this work there will be found laid down a plan of the instruction, which, though doubtless capable of great improvement, may serve as a starting-point for those who desire on their own part to make attempts of the same character. The Central Union of the Arts applied to Industry have also organized a lecture to be delivered on 4th of April next, on "The Application of Photography to the Manufacturing Arts." Of this, in a future letter, I shall give an account; needs must that I shall be present at the meeting, as, to tell the whole truth, I shall have the honour of being the lecturer. All these lectures and lessons that I have now enumerated are a complete justification of the sentiment with which I commenced this letter, that public opinion is now very favourable to photography. We ought to be thankful for it, as well as for all that is capable of ennobling our art, and raising it in the scale of human science, and we should feel ourselves encouraged to do all we know to increase its usefulness and value.

New Work by M. Radau.—An interesting book, written by M. Radau, and published by the house of Gauthier-Villars, has just been issued from the press, in which will be found a complete corroboration of all that I have stated on the subject of the applications of photography to science. This work, whose title is "Photography and its Scientific Applications," is well adapted to promote the extension of photography of which there are at present so many signs. In his preface the author expresses his

astonishment that the numerous applications which photography admits of have been so late in introducing themselves into the practice of men of science; even now the attempts to do so are few and far between. He further cites all the applications to astronomy, meteorology, chemistry, physiology, &c., to prove that he is right in recommending scientific men to avail themselves fully of the services that photography can render. The examples of Mr. Warren de la Rue in England, and of M. Janssen in France, may excite, though they still wait for, imitators; and as progress is everywhere, and more especially among ourselves, excessively slow, we cannot sufficiently thank M. Radau for the labour he has undertaken, and hope to congratulate him on the result. He belongs himself to the ranks of men of science, and his authoritative voice cannot but have an echo. It will be seen, therefore, that we in France are at the present moment engaged in advancing the progress of photography, and all are ready to lend their assistance—some by word, others by writing.

The Moniteur de la Photographie.—I cannot finish this letter without announcing to the readers of the PHOTOGRAPHIC NEWS that the vacancy in the editorship of the *Moniteur de la Photographie*, which was caused by the death of the late lamented Ernest Lacan, and which I had filled provisionally since that event, will now be occupied by me permanently, the result of an agreement with his widow, who remains proprietor of the journal in question. It was some time before I could persuade myself to undertake this office, which I had hoped to see filled by one more able to do so worthily; but time was pressing for a settlement, without which there was some risk of imperilling the existence of the paper. My intention now is to devote all my energies and spare time to the work, with the hope that, should anyone present himself more capable of taking it up, I may be able to hand over to him both the editorship and the responsibility attached to it. What sustains me in undertaking this enterprise—which is, perhaps, too great for my powers as respects the knowledge that it requires—is the strong desire to make use of it in promoting the progress of photography. In this path I have been for a long time a traveller, and have, therefore, no fear of fatigue; but I have to pray for the indulgence of my readers and of my photographic colleagues for very possible shortcomings. In one respect they can materially assist me—namely, by sending me their valuable communications. I ought also to say a few words on the important work that I have now undertaken in connection with the PHOTOGRAPHIC NEWS, on whose staff I am about to occupy the place of my excellent friend, who was, up to the time of his death, the French Correspondent of your valuable journal. Having been for a long number of years the attached friend, as well as a colleague, of Ernest Lacan, it seems that I am destined to pay to his memory a real debt of affection by following in his footsteps—by putting my name, which he esteemed, in the place of his, which I shall never forget. Will the subscribers and readers of the PHOTOGRAPHIC NEWS charitably accept his successor, regarding me as an old acquaintance, for the majority of them know my love for the photographic art, and excusing one whose pen is so weak, for venturing to take the place of a friend, now, alas! no more, but whose elegant and correct style was so highly estimated? I may, it is true, succeed him; but I have not the assurance to believe that I can ever replace him.

LEON VIDAL.

THE BEST PLAN IN THE WORLD TO TRIM PRINTS

Mr. J. ISOLES, writing in the *St. Louis Practical Photographer*, says:—

"It used to be a tedious job, after a big day's printing, to set to work with a pair of scissors and glass, to trim up the

day's work before toning, to say nothing about clumsiness after it was done.

"My plan now is with a common steel die and mallet; fold a sheet of paper up into sixteen parts, and with two cuts the whole thing is done as 'true as a die.' It don't occupy more than one minute to trim thirty-two pieces. Cabinets are cut as quick as cards. The cost of the dies is \$5 for the cabinet, and \$4 for the card size. Then, I have different sizes and shapes of them for cutting out masks with perfect exactness and facility—a plan once tried, never can be given up.

The same writer also gives the following hints:—

"HOW TO MAKE AND KEEP THE SILVER BATH FOR PAPER.

Nitrate of silver	...	...	...	1 part
Nitrate of potash	...	...	...	$\frac{1}{2}$ "
Water	...	...	...	9 parts
Alcohol	...	...	...	3 "

"Empty this into the silvering tray, and leave it there for months, or years, if you wish. Before silvering take off the seam, which forms on the surface of the solution, with a strip of paper.

"This bath will keep in order for years, by simply adding to it more solution prepared as above. Should it evaporate too much in hot weather, it will be necessary to add water to it instead of the solution. This can easily be seen; when the prints begin to look coarse in the printing, the appearance they have with a too strong silver solution is very frequently taken for being caused by too weak a solution, and by strengthening it only adds to the disease.

"Float the paper from one minute to one minute and a-half; draw the sheet off slowly and over the edge of the dish; lay it down on a board and blot it thoroughly, surface dry, with blotting-paper. By this means you will never be troubled with tear-drops, or streaks from unequal drying, &c., &c. A sheet can be silvered at any minute in the day, when wanted in a hurry, and dried in less than five minutes, the solution always being ready in the dish. This bath has not discoloured with me in three years' use."

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held on Thursday evening, April 4th, at the Society of Arts, John Street, Adelphi, the Rev. F. F. STATHAM, F.G.S., President, in the chair.

THE SECRETARY read the minutes of the previous meeting, which were confirmed.

THE PRESIDENT begged to apologise for his absence from that meeting through illness.

In accordance with the motion at the last meeting, he had written a letter of condolence to Mrs. P. Le Neve Foster.

THE PRESIDENT then called upon Mr. A. Brittlebank to read his paper on Artificial Lighting which he illustrated with diagrams and experiments; he also exhibited a very simple changing box for changing the plates. The Chairman then sat for his portrait, the exposure given for each exposure (a double plate being used) being about five seconds, which was developed successfully, and handed round for inspection of the members. [Owing to the late receipt of copy, and the necessity of going to press a day earlier, to publish before Good Friday, we are unable to get the diagrams engraved in time for this week's issue. The paper will appear in our next.]

THE PRESIDENT next called upon Mr. Clarke (Messrs. Alder and Clarke) to read his paper bearing on the same subject—Artificial Lighting (see page 170).

THE PRESIDENT then made a few remarks on the two papers which had been read. He said he thought it a great stride in the right direction to take portraits independent of daylight, and considered it would be a great acquisition to many, especially during the dull winter months. The apparatus exhibited by Mr. Brittlebank had one special advantage, being very portable and very simple to construct at a very low cost. He thought

the magnesium light that Mr. Brittlebank used was too strong it being rather unpleasant to the eyes; but he supposed that could be easily overcome, and he had an idea that there were many other simple lights of great actinic power that might be used for the purpose, such as burning phosphorus in oxygen; and the light Mr. John Spiller exhibited a few years ago, burning sulphur or nitrate of potash, might be of great value; but with a lantern light, when used, it would be important to make the light comfortable to the sitter's eyes.

MR. JABEZ HUGHES was then called upon to make a few remarks on the subject. He said he would rather not at present, as he only came to listen; but he might do so further on.

MR. CLARKE stated that he had used gelatine plates for the ball at Chelsea, and also at another subsequently, with what success he would leave the gentlemen present to judge for themselves by the specimens he passed round (which were greatly admired). Mr. Cobb had kindly assisted in developing some of the plates, and perhaps he might make a few remarks as to his mode of proceeding.

MR. COBB said he developed the plates, which were gelatine ones, by the ordinary method, which had been published many times, the only difficulty he had found, although the plates had received such a short exposure, being that most of them were over-exposed.

MR. PEARSALL wished to ask Mr. Clarke whether the negatives had been retouched, or only the defects touched out. He was very pleased with the results he had seen, and thought some of the specimens were almost perfection, and he also thought other lights would come forward.

MR. CLARKE, in reply, said that little or no retouching had been done, only the defects touched out. The negatives when taken had almost the appearance of being retouched. He thought the effect was due to the great penetrating effect of the light used, if he might so use the term.

MR. BRITTLEBANK stated that one of the specimens he handed round was taken at eleven o'clock on the night previous. He had brought the apparatus up in its rough state, so that members could see, and make it for themselves if they thought proper; and altogether, he had not taken more than a dozen negatives with it, and many improvements might be made on it.

One or two of the negatives Mr. Brittlebank handed round for inspection were very sharp and clear, and fully bore out what he (Mr. Brittlebank) had said.

MR. BROOKS said that he had had little or no experience of artificial light as applied to portraiture, his work by artificial light being in another direction. He thought the combustion of phosphorus in oxygen could be brought into use, it being one of the most intense lights known.

MR. BRITTLEBANK said he did not think a reflector of parabolic form was required.

MR. HARRISON did not quite agree with Mr. Brittlebank in some of his remarks about the reflector used. He said reflectors might be made with copper, and well cleaned, and then rubbed over with nitrate of mercury, which would be far less expense than silvering, as silver did not last any time; but with the nitrate of mercury it could be easily applied at any time, and answer every purpose.

MR. BOLAS said he did not think it mattered much whether the reflectors were square or round, when a diffuser was used, but a parabolic form was the best when the light emanated only from a point, but not where a row of lights was used, as in Mr. Brittlebank's arrangement.

MR. COBB said he thought that we were passing through a very eventful time in regard to photography. He thought we should soon see advertised, "no home without a camera."

In reply to a question,

MR. CLARKE said the cost of the light when a gelatine plate was used was about three-farthings each exposure.

MR. LAVENDER remarked that he had seen some specimens done by the electric light, which he considered perfect.

MR. CLARKE, in reply, stated that he had used the electric light, but found it was not suitable with his apparatus.

MR. W. B. BOLTON said Mr. Clarke's reflector was not suitable, as it required a parabolic form, hence his failure.

MR. JABEZ HUGHES said he had listened with very great interest to the evening's proceedings, and thought it was a difficult matter to deal with, in the sense of avoiding the question of shop which was often raised, and thought that gentlemen who had spent a great deal of time and money on these inventions or improvements were public benefactors, and were entitled to make the best market of their efforts, and that at the same time, at

societies, they could be discussed on their merits, without overstepping the limits of the Society. He thought we were now upon the threshold of a new era in photography, just about the same as when the old Daguerreotype process was going out, and the introduction of collodion, and the extraordinary feature was that we were now getting dry plates of marvellous rapidity, which should not be lost sight of; if we had not those rapid plates the results he had seen that evening could not have been obtained. Portraiture by artificial light was in itself nothing new, for about eighteen years ago he remembered presiding at a meeting, and having his portrait taken on the platform, before about two thousand people, by the electric light; the plate was next developed, and then projected on a screen by the same light, to the satisfaction of the audience. Mr. Cobb had been bemoaning that he could not that afternoon get a portrait by an ordinary exposure of twenty seconds. He (Mr. Hughes) said he remembered in the old days that he could only get portraits with twenty seconds' exposure about two months during the year; at other times it used to be 60 seconds, 90, and 120, and sometimes more; but with the extraordinarily rapid plates things were greatly altered, and he thought, after the summer had passed, we should see very great improvements in artificial lighting.

Mr. W. B. BOLTON exhibited some specimens taken by ordinary gaslight, 28 burners being used, equal to about 400 candles; they were taken by Mr. P. M. Laws, of Newcastle; one was a statue having had eight minutes' exposure, the other a vignette portrait, five minutes' exposure, showing that it was possible to take portraits by gaslight.

A vote of thanks was then passed to the gentlemen who had contributed to the proceedings of the evening, after which the meeting was adjourned to May 1st. On that evening a paper will be read by Mr. Foxlee, "On the Continued Action of Light in Carbon Printing"; also a paper by Mr. Harrison "On Reflectors."

The PRESIDENT said he wished to announce, before the meeting broke up, that it had been resolved upon in committee that evening, that as the Society had many surplus presentation prints of past years, they should be disposed of at the next meeting, and the proceeds applied to wipe off a small debt there was owing by the Society, so if any gentlemen had not had their presentation prints, they must claim them before that evening. He hoped soon to see the Society relieved of the little difficulty respecting finance. The presentation prints alluded to were the prints of three or four years back and previous, as none have been issued since about that time.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

The ordinary monthly meeting of this Society was held, as usual, at the Museum, Queen's Road, on Wednesday, the 2nd instant, Mr. W. RADCLIFFE in the chair.

The minutes of the previous meeting having been confirmed,

Mr. H. A. DANIELS (Hon. Secretary) apologised on behalf of Mr. R. Biggs for the postponement until the May meeting of the paper that gentleman was announced to have read. He (Mr. Daniel) then exhibited a changing-box for dry plates of the old pattern, which he thought would prove of interest, especially as one of the latest and most approved designs was to be exhibited during the evening. The old pattern box was simply fitted with a groove at the top to admit the dark slide, and with a shutter and sliding top. A metallic shutter, working on a hinge, with a milled-head handle, opened the dark slide.

Mr. BRIGHTMAN then exhibited a newly-designed camera by Mr. G. Hare, and pointed out the many advantages of this instrument over the ordinary form of portable cameras. By a novel arrangement of the base-board, the body of the camera can be extended from three and a-half to sixteen inches, and when extended is perfectly rigid in every part. The main base-board, being panelled, carries in a well fitting groove a sliding framework which can be instantly extended and clamped in the required position by milled-head screws; for the delicate focussing, the rack-and-pinion is then brought into play, this arrangement answering to the rough and fine adjustment of a microscope. By a simple arrangement of the back both vertical and horizontal swing motion is obtained; the front is also capable of adjustment in four directions. In addition to the usual rising front, by a simple changing of a milled-head screw the front can be lowered to any desired extent—a great advantage in taking

pictures from elevated positions. Mr. Brightman also exhibited (in case anyone present had not seen one) a seven by five changing-box by the same maker. The fine finish and smoothness of its working, as also its automatic simplicity, were exceedingly admired.

Mr. DANIEL said he could not help remarking that the camera was undoubtedly the best and most completely designed he had ever seen, everything that could be desired had been so carefully taken into consideration.

Mr. J. F. POWELL asked if any member had ever seen a panoramic picture that had been taken on more than one negative, invisibly joined in the printing, as he thought it would be quite possible to do so quite imperceptibly with the use of vignetting glasses.

The CHAIRMAN remarked that he had got the best results by using a very long plate and a wide-angle lens. Johnson's pantoscopic camera had done very good work of that description, some of which, executed by a friend of his, he (the Chairman) had seen. He had also seen some very strange effects caused by his friend standing in the picture, and then dodging the camera while revolving, and sitting again in a different part of the same picture.

Mr. DANIEL exhibited one of Moore's wooden baths lined with pure rubber. The bath was considered to be beautifully finished, and furnished with a very nice arrangement for making it watertight, the top moving up and down in a slot, and not separating from the bath, thus preventing its being mislaid or soiled with other solutions. The rubber is fitted in such a firm and complete manner that it is almost impossible for the slightest leakage or connection with the wood to take place. Mr. Daniel considered it the greatest improvement that had been made in baths.

Mr. POWELL said he had been told that those baths could not be relied on after three years' wear; he had had, however, no personal experience with them.

Mr. DANIEL said that the evidence of a firm of dealers was that two or three professional land-captists had been supplied with them, and although constantly doing a large quantity of work, had used them for a number of years, and were still doing so.

The HON. SECRETARY then announced that the May meeting would be the last indoor meeting of the session, and hoped to see a large number of members to hear Mr. Biggs's paper.

The meeting, after some informal conversation, broke up.

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

The Board of Management of this Association held their monthly meeting on April 2nd, at 160A, Aldersgate Street.

The minutes of the previous meeting were read and confirmed, and Messrs. Broadhead and Crosthwaite (of Leeds), and Hutton (of Cheltenham), were elected ordinary members of the Association.

The other business of the evening having been transacted, the meeting adjourned till May 7th.

PHOTOGRAPHIC SOCIETY OF FRANCE.

At the meeting of the 7th February, M. PELIGOT, member of the Institute, president of the Society, in the chair, a communication was read from M. Lamy, on the influence of heat, cold, and moisture in carbon photography. The result of M. Lamy's observations is that at a temperature above $+12^{\circ}\text{C}$. the bichromated gelatine becomes gradually insoluble* without the action of light. This fact explains what was formerly supposed to be the action of light continuing in the dark. So long as the gelatine has not become completely insoluble, M. Lamy prefers to consider it as *hardened*, and the hardening process is more active the longer is the time that has elapsed since the sensitizing, and more rapid in proportion as the atmosphere is warmer and moister. It is also greater in proportion to the length of time between the exposure and the transfer, and between the latter and the development. For this reason paper that has been bichromated one day should be

* To a note M. Lamy thinks it necessary to remind his hearers that the gelatine becomes at once partially or totally insoluble when the room in which the tissue is hung up to dry after being sensitized is heated with a stove or with gas. The insolubility is complete when the room is very small, and its temperature very high; it is only partial when the room is large, and the air is kept continually renewed by opening the door. It is therefore indispensable to bichromatise and dry the tissue in a room which is not artificially heated. When, during rainy weather or the prevalence of a thaw, the tissue refuses to dry, the best method of obtaining desiccation is to suspend it in a closet at the bottom of which is a large, closely-covered pan full of very hot water. The closet must have an aperture above and below to create a draught.

used the next, and it is necessary to transfer and develop as soon as possible after exposure. Paper, however, that has been sensitized some days ago, or that cannot be transferred and developed immediately, may be developed by using a warmer water, to the extent of 5° or 10° more for every day of delay, provided that the water be maintained at the same temperature during the whole operation; or the same effect may be produced by adding to the water a little liquid ammonia or solution of sodium carbonate. Care must be taken in each case that the water is not too hot or too alkaline, or the development will be too rapid, and cause white spots in the half-tones. But when the thermometer stands at a point below + 12° C. the hardening takes place more slowly, and the development is easier and more regular. On the other hand, the image is weaker in the same degree as the thermometer stands below + 12° C.; moreover, a tissue recently sensitized can be developed in a water as cool in proportion as the tissue itself has been submitted to a lower temperature during the exposure. The remedy for these defects consists, as M. Lamy points out, in prolonging the exposure, the indications for which he obtains by the use of his actinometer, described in our French Correspondence (see PHOTOGRAPHIC NEWS for December 27th, p. 614).

In a few well expressed and sympathizing terms M. DAVANNE alluded to the loss which photography in general and the Society in particular had sustained by the death of M. E. Lacan, the late editor of the *Moniteur de la Photographie*, and it was resolved to address a letter of condolence to the widow.

M. DAVANNE also placed at the disposal of the members a number of copies of a tract by M. E. Bazaine on the work, researches, and discoveries of M. Poitevin, and presented the first number of a new periodical, *Les Petites Affiches Photographiques*.

M. FABRE, of Toulouse, presented two works, one the *Aide-Memoire de Photographie* for 1879, and the other a tract entitled *Renseignements Photographiques*, on the employment of photography in scientific investigations.

Après of the latter, M. PERROT DE CHAUMEUX drew the attention of the meeting to a work by M. Radau, recently published by M. Gauthier-Villars, on photography and its scientific applications, in which an interesting account is given of the services that photography is able to render to astronomical and microscopical observation.

A letter was read from M. LEON VIDAL, announcing the organization of a series of lectures on the Industrial Reproduction of Works of Art; and another from M. BRAUN, stating that with dry emulsion plates he had been able to obtain the same results as with wet collodion.

A communication was read from M. LAIR-DE-LA-MOTTE on the results that he had obtained by developing gelatino-bromide plates with the carbonates of ammonia and soda. He prefers, as a rule, the salt of an alkali whose composition can be readily determined, to the common liquid ammonia found in the shops, the strength of which is very variable. The following is the composition of the solutions of the two salts which he employs:—

A	{	Water	...	...	100 cub. cents.
	{	Ammonium carbonate	...	...	25 grammes
	{	Potassium bromide	...	...	1·2 "
A ₁	{	Water	...	...	100 cub. cents.
	{	Ammonium carbonate	...	...	25 grammes
or else—					
S	{	Water	...	...	100 cub. cents.
	{	Sodium carbonate	...	...	25 grammes
	{	Ammonium bromide	...	...	1 gramme
S ₁	{	Water	...	...	100 cub. cents.
	{	Sodium carbonate	...	...	25 grammes

These solutions when made with warm water are nearly saturated at this time of the year. The plate, having been washed for five or six minutes in water, is plunged into a dish containing (for a plate 18 by 24 cents.) 125 cub. cents. of a 1 per cent. solution of pyrogallie acid well mixed with from 12 to 15 cub. cents. of good beer, and kept then for nearly a minute. The plate is then withdrawn, 4 to 5 cub. cents. of the solution A, or else of the solution S, added to the bath, and the plate again immersed in it for thirty or forty seconds; no image will yet appear. Again 3 cub. cents. of A, and 2 of A₁ (or working with the soda solutions of S and S₁) are added, and the plate once more immersed for about half a minute; the image will now make its appearance. The development may be continued, if necessary, by adding more or less of A and A₁, or of S and S₁, as the case may

be. Using the sodinm solution for developing negatives of gelatino-bromide, whose colour is highly non-actinic, too great intensity may possibly be produced, for which, probably, a shorter exposure may be recommended as a remedy. With an alkaline development any required degree of intensity can be obtained; still, if it should be insufficient, the image may be intensified by a mixture of pyrogallie and acetic acids containing about ten per cent. of beer.

After the reading of extracts from the home and foreign journals by M. PERROT DE CHAUMEUX,

The financial statement of the Society for the year 1878 was presented by the Treasurer, and the officers for the ensuing year elected. M. PELIGOT, Member of the Institute, was again appointed President.

M. CHARDON communicated the result of his experiments with Russian cotton wool which had been introduced to the notice of the Society by M. Warnerke. The peculiarity of this wool appears to be that all the resinous constituents are removed by treatment with steam. It has been found useful in the Russian Medical Service, instead of lint, for dressing wounds. Its advantage for the preparation of pyroxyline appears to consist in its greater sponginess, owing to which it becomes immediately saturated with liquid. In ordinary cotton, the resinous substance which coats each fibre resists the direct action of the acids, so that they become more and more dilute, and their effect is considerably modified. Hence is produced a mixture of various kinds of pyroxyline having different degrees of solubility. On the other hand, it seems probable that ordinary cellulose is not a homogeneous body, but that each body contains substances which are acted on successively, resulting in a complex compound. By precipitating the pyroxyline from normal collodion by means of water, and collecting and redissolving the precipitate, M. Chardon succeeded in obtaining an excellent collodion for emulsion purposes. As regards the particular cotton in question, his experiments proved that the penetration of the acids was more rapid, and the resulting pyroxyline more homogeneous, than with ordinary cotton. He prepared it by immersing the cotton in a mixture of potassium nitrate and sulphuric acid for five minutes at a temperature of 80° C. After resting for some days, the collodion was sensitized by a solution of 12·25 grammes of silver nitrate in 120 cub. cents. of alcohol; it acquired that orange-red colour which is regarded as a proof of its good quality. The excess of silver was then neutralised by 10 cub. cents. of collodion chloride of cobalt, and precipitating with hot water removed a larger proportion of the soluble products, mixed with particles of silver bromide, which were no longer retained. Finally, the emulsion was prepared by the following formula:—

Alcohol	...	...	...	...	40 cub. cents.
Quinine	...	...	...	...	0·2 grammes
Dried emulsion	...	...	...	...	6 "
Ether	...	...	...	...	60 cub. cents.

The general result obtained by M. Chardon is, that the sensitiveness of an emulsion made with the Russian cotton is about the same as that made with his own doubly precipitated cotton, above described; but in the fixing he observed that the image obtained with the former is softer, and its effect more uniform. Further experiments are, however, he thinks, necessary before arriving at a decided opinion.

M. FERRIER submitted some of his pictures obtained with the gelatine emulsion process, and gave a detailed account of his method of working.

M. STEBBING mentioned that, according to his experience, the gelatino-bromide process is equally, if not more, rapid than that with wet collodion. He uses iron oxalate as developer.

M. CALOIR sent for exhibition at the meeting several samples of a new substance that can be used in retouching negatives. This product has a certain similarity to that which, under the name of *chaoma*, M. Carotte exhibited to the Society in 1877, and recommended for the same purpose. It rejoices in the sufficiently complicated name of *Nach-Sel-Tjube d'Ile-Mea*, and is sold in the form of lozenges, each one of which gives a litre of solution. This solution is flowed like gum over the surface of the negative, which must have been well drained, but be still moist. If the negative has been dried, it must again be moistened before being coated with this species of varnish. The film can readily be worked on with either the pencil or the point.

M. BARDY gave an experimental demonstration of the means of recognizing with rapidity and facility the impurities of commercial glacial acetic acid. It is hoped that M. Bardy will on a future occasion publish his communication on this subject.

Talk in the Studio.

MR. J. TRAILL TAYLOR.—*Anthony's Bulletin* announces to its readers that this gentleman has kindly consented to furnish articles for its columns, which will thus present additional originality and interest.

RIVAL PROFESSIONAL BEAUTIES.—*Professional Beauty* (with photograph of Zulu): "Isn't it too bad? After we have lavished our loveliness on an ungrateful public in every pose in which skin-tight costumes could show it off, they are actually allowing these wretched black creatures to appear in—no costume at all."—*Funny Folks*. The same paper, in a skit on the budget, suggests a penny stamp duty on cartes-de-visite—those of criminals and professional beauties to bear a sixpenny ditto.

AMERICAN v. ENGLISH MECHANICS.—Mr. W. J. Stillman, writing in the *Scientific American* on the mechanical genius of American workmen, complains of the want of ingenuity and skill of English workmen. He says:—"I am myself sometimes attacked by a mechanical idea, and now and then it results in an invention. It happened on one occasion the product was a photographic camera-obscure, which involved some mechanical principles new to this kind of work. I made an elaborate working drawing full size, with details of all new parts in separate drawing, and sent them to a camera maker who had the highest repute in London, but after some months they came back with a message that the arrangement was not practicable. I then went personally with the drawings to another workman, who was really the most ingenious in this branch I ever found in England, and even with him was obliged to make a wooden working model of the whole thing before I could make him see that it would work, and I had to watch the construction from beginning to end, intervening at every new step to keep it what I had planned." Notwithstanding this, the best photographic apparatus in the world is undoubtedly made in England. But the English workman, or, more correctly, the metropolitan workman, dislikes to make a single article to a special pattern. It is best to go to a provincial mechanic for such work. Mr. Stillman adds, we think unfairly:—"The English workman in general is insensible to those nice degrees of excellence, neatness, and precision in the manipulation which the American workman catches so readily."

A POWERFUL SPECTROSCOPE.—In the young science of spectroscopy, as in others, an important element of progress is the improvement of instruments for dealing with the phenomena presented, and many minds are engaged on this. A new spectroscop of remarkable power has been brought to the notice of the French Academy by M. Thollon. Its chief feature is the use of sulphide of carbon prisms, which are closed laterally, not by plates with parallel faces, but by prisms of the form of Amici's—i.e., having curved sides meeting at an angle (which, however, is much smaller than Amici's prism). The refringent angles of these prisms are in an opposite direction to that of the sulphide prism. Two of these compound prisms are substituted by M. Thollon for the simple prisms in a spectroscop, which he formerly described to the Academy. Without going into further details, we may simply state that an enormous dispersion is obtained; with a magnifying power of 15 to 20 times, the spectrum has a length of 15 metres. The angular distance of the D lines of sodium is about 12', whereas that produced by M. Cassiot was only 3' 6". This instrument should throw considerable light on the structure of the spectrum, and M. Thollon has already noticed some interesting facts. The lines of sodium and magnesium present a dark nucleus passing into a nebulosity, which becomes gradually merged in the continuous spectrum. Many lines have been split up, and all that have been thus resolved have been found to belong to two different substances. One of the hydrogen lines presents a nebulosity without a nucleus. M. Thollon remarks on the magnificence of the spectrum of carbon from the electric arc, observed with the new instrument. The spectra of iron, copper, and magnesium in the same arc were also seen with admirable clearness and brilliancy. These new spectroscopes have been constructed for M. Thollon by the able optician M. Laurent.

CELLOIDIN, A SUBSTITUTE FOR GUN-COTTON.—A new kind of nitro-cellulose has lately been placed on the market by the chemical works of E. Schering, in Berlin. This has been named *celloidin*, and appears to be a very useful substance, both for the photographer and for the pharmacist. It is put up in plates which are neither explosive, like gun-cotton, nor

readily inflammable. Ignited it burns like paper, and when heated in a test-tube, it chars slowly. Its transport by rail, waggon, or mail, is therefore unattended with danger. This substance is soluble in alcohol and ether in any proportions, and yields a perfectly clear solution, leaving no residue. Each plate weighs about 210 grams (seven ounces) and represents, when completely dry, exactly 40 grams of pure celloidin.—*Schweiz. Wochensh. f. Ph.*

To Correspondents.

ELECTRIC.—The defect in the cards enclosed is due, we think, to the mounting material used. It may have contained some injurious substance, or it may have become sour. Our first impression was that such a cause was in operation, and on soaking the card in warm water to remove the print from the mount, we found an accumulation of the mounting material laid thick just at the point where the patch of spots was present.

G. B.—The best remedy for the pinholes and comets in your negative is the addition of a little bromide to your collodion. The experiment you have been making in preparing your own collodion, and using iodides only, was common in the early days of the collodion process, is a very interesting one; but you may take it for granted that the change, now universal in practice, is based on experience. Good results were, undoubtedly, at times obtained with simply iodized collodion; but the conditions were very precise, and, if not carefully observed, many troubles were encountered. The collodion deteriorated in sensitiveness steadily after it was iodized; but if used too soon after it was iodized, streaks, spots, comets, and fog were encountered. Besides rendering the collodion more sensitive and making it keep better, the removal of comets, and such abominations, alone made the use of bromides a great boon.

F. R.—Your toning bath is spoiled beyond remedy. You must make a fresh one. The brown discolouration you describe is due to contact with hypo. Throw down the gold with iron, and so save it for making fresh chloride of gold. 2. We shall make the announcement in due time.

J. JUN.—The addition of citric acid to a silver bath will throw down citrate of silver if the solution be neutral or alkaline, but not if free nitric acid be present. The experience of the gentleman in question is, that all samples of nitrate of silver in commerce at the present time are neutral. The precipitate of citrate of silver weakens the solution very much, as citric acid being a tri-basic salt, three atoms of silver are precipitated by each atom of citric acid.

G. F. M.—The difficulty caused by the tendency in magnesium ribbon to go out, so causing intermission of light, may be overcome by keeping a gas flame or a spirit light burning underneath it. The primary difficulty in using this light for portraiture is the dense white smoke which accumulates. A method of getting rid of this was once devised, but never published.

M. M.—We have often explained that the difficulty in obtaining a rich deep tone in prints was due rather to the negative than to the quality of the paper or to the toning bath. With a thin weak negative, wanting in contrasts, no really rich print can be produced. The shadows should be nearly transparent, and the high lights dense. With a thin poor negative a rich black tone cannot be obtained, because a sufficient depth of printing cannot be secured in the shadows without losing the purity of the whites. When sufficiently printed to do justice to the lights, the prints will tone to a brown, or if carried further to a slatey grey, but not to a black.

G. B.—The notion of producing stereoscopic relief in a single figure, by projecting the images from two lenses one upon the other, has often been entertained, but is the result of a misconception; it cannot be done. By skilful drawing and management of light and shade, an effect of great solidity in a single image may be secured, as is often done in scene painting, and occasionally we have seen a similar effect in photographs. But the attempt in question is a waste of time.

PORCELAIN.—In the communication to which you refer, the writer assumes that the reader knows how to produce transparencies, and merely gives his method of treating them to imitate porcelain. They are evidently printed by contact with the negative by the aid of a gas light. A two-grain solution of pyro, with thirty minims of acetic acid to the ounce, will answer. 2. Enlargements can be produced on collodion by treating a darkened room as a camera. 3. Technically, porcelain and opal glass are not the same, but in common phraseology they are often treated as the same, and generally mean the same thing in relation to photographs. If you have a solar camera you can enlarge on sensitive albumenized paper when you can command sunlight; but it is a troublesome process. With a powerful condenser an hour of bright sunshine might serve. It is difficult to develop albumenized prints. A saturated solution of gallic acid is used for developing paper prints. Several correspondents in our next.

*The Photographic News, April 18, 1879.***PHOTOGRAPHY IN AND OUT OF THE STUDIO.
THE OWNERSHIP OF THE NEGATIVE AT HOME AND ABROAD—
HELIOSTAT OR HELIOGRAPH.**

The Ownership of the Negative at Home and Abroad.—The ownership of the negative appears to be receiving attention once more abroad. It is a matter of much importance to the photographer, and one, therefore, that ought to be definitely settled. In this country no doubt the new Copyright Bill will contain a clause upon the subject, although it has been for years past an accepted dictum that the photographic negative belongs under ordinary circumstances to the man who produced it. Of course there are times when the photographer can make no claim, as, for instance, when his assistance has been invoked for the avowed purpose of securing the negative, or when he may be desired to do work with another man's apparatus. Again, it sometimes happens that a photograph is secured under the joint superintendence of two persons, in which case a dispute of claim may well arise. We remember some ten years ago an instance of this kind that was brought before the Paris law courts. The matter in hand referred to a negative of no less a person than the late Emperor of the French, who was presented upon horseback, a pose of which no other good picture was in existence, so that the proprietorship of the negative was an important affair. The negative was the work of that eminent firm MM. Bisson frères, and of its intrinsic value there could be no question. MM. Bisson frères had been commissioned by a French painter, M. Yoon, to take a portrait of the Emperor, and MM. Bisson frères contended that when they had supplied copies of such portrait, then the commission had been duly executed. But M. Yoon claimed both negative and copies. At first sight, no doubt, the photographer appeared in the right, but the circumstances under which the photograph was taken materially altered matters. M. Yoon swore distinctly that he had simply engaged the photographer to act implicitly under the former's directions. M. Yoon desired to paint a portrait of the Emperor on horseback, to be the centre of a battle picture representing the fight at Solferino, and, being unwilling to trouble the august sitter for a lengthened sitting, he had constructed a model horse upon which to pose the Emperor. M. Yoon further stated that, besides posing his sitter, he managed the lighting, and decided upon the point where the camera was to be placed, thus fulfilling all the artist's work in connection with the taking of the photograph; the photographer's labours were confined, he averred, to the purely technical portion of the work. The Court in the end adopted M. Yoon's statement, and, under the circumstances, naturally enough declared the negative to be the property of the artist who had commissioned the taking of it. That it was the joint production of two men, an artist and a manipulator, the Court said was evident; and as one man was avowedly working under the direction of the other, the property must be given to the employer, and not the employed. Few would be disposed to cavil at such a verdict; but as the case is one that is sometimes cited to prove the photographer's right to the negative is not an incontrovertible one, the circumstances under which the case was given against the photographer should be remembered. In this country, he who desires a negative, as well as print therefrom, has no difficulty in obtaining it, provided he makes known his wish *before* the work is executed. Photographers do not desire such work on commission, as a rule, as it is foreign to their mode of business; but anyone desiring to possess a negative photograph would have little difficulty in securing what he wants. But he must be prepared to pay, for not only does a negative mean actual value of material, but forms part of the photographer's stock-in-trade. Moreover, the anxiety of some people to possess negatives is very foolish on their part. If they consider a negative valuable and worth

keeping, it is far safer in the hands of a photographer than their own. Besides the ordinary risk to which glass is liable, the photographic film is subject to dangers of its own, and these the photographer knows how to guard against better than his patrons.

Heliostat or Heliograph.—The heliostat apparatus which is now employed, as already mentioned, for sunshine signalling, both in Afghanistan and Zululand, has received the name of heliograph by Mr. Mance, who has initiated the method of working. As we have stated already in these columns, the plan of signalling is simply to reflect an image of the sun to a distant station. As the sun is continually moving—or, rather, the earth—the angle at which the mirror must be to do this requires to be changed also, and hence the heliostat with its clockwork arrangement is made use of. The heliostat mirror follows the sun, and the consequence is that, after it has been once properly adjusted, a bright flare—the reflected image of the sun—is seen at the distant station. This flare or spot may be observed by mechanical means at any time, and the appearance and extinction of the light constitute the signals. The light shown for a brief period is called a dot, and for a longer period (three times as long) a dash. All the letters of the alphabet are made up of dots and dashes. The letter E—that most used—is represented by a single dot or short flash; the letter T by a dash. A is shown by a dot followed by a dash; N by a dash followed by a dot, and so on. But although Mr. Mance calls his modified apparatus a heliograph, it does not write down the signals. It is a pity, by the way, he has chosen the name which has been made use of by photographers for years past. Heliograph and heliogravure, signifying an impression by the sun, just as photograph signifies an impression by light, are the earliest terms employed by Niépce and his colleagues, and yet Mr. Mance has applied the term again to his light-signalling apparatus, which, unlike the telegraph and other "graphs," does not write or impress at all. Since, however, the employment of Mr. Mance's apparatus has now come into general operation in the field, perhaps it would be well if it could be converted into a true heliographic instrument, and write down its signals. There should be little difficulty in bringing this about. As we have said, the station to which the signals are sent observes a bright flare or spot, sometimes for a short period, sometimes for a longer one, or, in other words, sometimes for a duration of a second, and sometimes for three seconds. The light is very intense, for it is a reflection of the sun itself, and there can be little doubt that if it struck a sensitive film, it would at once impress the latter. This sensitive film might be iodide paper, to be developed hereafter with gallic acid, or, in fact, any similar substance. The bright flare would be caught up by a condenser and thrown upon the sensitive sheet in the form of a tiny spot. The tiny spot would at once impress the sensitive sheet, and if the sheet were made to travel along by clock-work at a certain fixed rate, then the tiny spot would make a line upon the film. If the bright spot was visible for a second only, the line made upon the moving sensitive film would be a very short one, while in the case of its shining for three seconds we should have a line of appreciable length. In fact, we should have a dot or a dash upon the sensitive film according as a short or long signal was flashed. In this way a truly "heliographic" apparatus would be at hand, and we think it would be worth Mr. Mance's while to consider whether such an improvement could not be made.

FRENCH CORRESPONDENCE.

M. ARTIGUE'S PHOTO-TRACING PAPER—AUTOGRAFIE POLYCHROME—DEATH OF M. BACARD, SEN.—PHOTOGRAPHIC SOCIETY OF FRANCE—SOCIÉTÉ DES ARCHIVES—GENERAL NEWS
Artigue's Photo-tracing Paper.—When a specialist meets with some novelty that interests him, he is absolutely

like a child who wants to break his toys to see what is inside, but whose curiosity is never satisfied. For this reason I had a great desire to find out all about the *Papier-Artigue*, so I betook myself to the inventor himself, and begged him to show me all the details of his invention. Having seen the whole process, which he was kind enough to exhibit to me, I am enabled to give a fuller account of the *Photo-Decalque*, as M. Artigue has named it, than I could do in my correspondence published in your issue of the 4th of April. In every other process with tracing-paper the draughtsman is compelled to make a vigorous drawing in thick India ink; he has also to be careful in securing the success of the photographic operations. By this new method he has only to transfer his tracing to the special carbon paper prepared by M. Artigue, and in less than ten minutes he will obtain a beautifully distinct negative copy *without the aid of daylight*; he has not even occasion to use the printing-frame. The carbon paper, which is coated at the back with a film of potassium bichromate, is merely thrown into water; the film then separates, and the drawing appears as a white line on a black ground. On exposing this negative in contact with the copying paper for three minutes in the sun, or for from ten to twelve minutes in the shade, a positive print is obtained. This print gives the lines of the drawing in black on a white ground, absolutely the same as if it were the original itself. The great and peculiar advantages of this process are, that it is particularly simple, and that it is not necessary, as with other carbon papers, to use hot water and its concomitants; the inconvenience of two sheets placed side by side is also avoided. It will be seen at once that the progress realized is a very remarkable one, and we may be permitted to express a hope that M. Artigue, who is a photographer of great ability, will succeed in adapting the process to carbon photography in general. The nicety required in the various operations of this branch of photography, and the attending difficulties, are the causes of the carbon processes being relinquished—for that they are being relinquished every day affords a fresh proof—except for transparent photographs and enlargements. In these two processes carbon still maintains its sovereignty, but in all others it is rapidly losing its power. It would not be wonderful if M. Artigue, who already possesses a key to the secret, were to restore the carbon monarchy, though without offending the republican convictions which are now so prevalent in France. M. Artigue has discovered another very ingenious method of producing a negative. A piece of tracing paper is written or drawn on with a pen dipped in a specially prepared ink, and a brush moistened with a certain mixture is passed over it, when the tracing becomes transparent. So great is the transparency of this negative that any number of excellent prints in black line on white ground may be taken from it in a very short time. In this respect it possesses a manifest advantage over transfer papers in which the line is coloured. The first-named process of M. Artigue is more especially valuable on account of its producing good negatives. For this reason it has been adopted in the office of the General Staff of the Army for the reproduction of military charts, as well as the Department of the Minister of the Interior for copying survey maps, and in both cases it is preferred to other processes, notwithstanding its costliness.

*The Autographie-Polychrome Process.**—As I am on the subject of new reproduction processes, it would not be right for me to omit to mention one which has received the name of *autographie-polychrome*; it is worthy of notice, no less for its very great simplicity, than for the rapidity with which it can be worked. By employing this process, also, a great saving is effected both of time and money,

* It will be noticed that in my letter which appeared in your issue of 4th of April I erroneously applied the name of *polychrome-autographie* to a process depending on the use of a substance consisting mainly of an aniline base. This is an error which my readers will probably have detected themselves, as I went on to speak of the prints being only blue and violet.

as the long and costly labour of making copies of drawings or plans in one or several colours is entirely avoided; all the colours of the drawings, whether worked by the pen or the brush, are reproduced at the same time by a single printing operation. This new system, the solution of a problem that has been long sought after, will be found to be indispensable in many branches of art manufactures. By means of it it is possible to obtain from twenty to forty copies of a drawing of any size; neither press nor laboratory is required, but merely the special colours and paper of the inventor. It appears to me that some account of useful inventions of this kind will be of interest to your readers, especially as without publicity being given to them, and attention being drawn to their merits, they run the risk of being ignored altogether. Whenever, therefore, I meet with a new process possessed of any value, and connected in any way with photography or its applications, I intend to describe it in my correspondence. It is very possible that similar methods are being worked in England; but in making known those which are introduced in France, I am giving an opportunity for comparison, which may lead to improvements on one side or the other. Giving this kind of information will have the additional advantage of calling attention to infringements of patents and copyrights, where such exist.

Death of M. Bacard the Elder.—In the course of the last few days we have had to deplore a sad loss in our profession. M. Bacard, senior, has at last succumbed to a painful disorder under which he had been for a long time a sufferer. The deceased gentleman was an artist of great experience, whose photographs were very highly valued. He was the proprietor of a large and prosperous establishment, and in the course of a hardworking and industrious career he has turned out many skilful and well-known pupils; among these his son, M. Bacard junior, who has a separate establishment of his own, is one of the first photographers of Paris. The death of M. Bacard causes a notable blank in the list of portrait photographers, and the news of it will be received with universal regret by the profession, who lose a respected colleague, and by the public, who will miss a favourite artist.

Photographic Society of France.—The general meeting of this Society, which was held on Friday, the 4th of April last, lost some of its anticipated interest in consequence of the adjournment of two subjects which had been announced for discussion: I refer to the promised communication of M. Ch. Cros, on "Improvements in negatives by an optional displacement of the actinic action," and to the expected exhibition by Mr. Gurney, of New York, of some specimens of photographs "coloured by his new process." These two important questions were, however, referred for consideration at the next meeting. Let us hope that "*Ce qui est différé ne sera pas perdu*," otherwise the Photographic Society will be giving the lie to an old proverb. We had, however, the pleasure of hearing at this meeting some observations from M. Stebbing, some remarks on the development of gelatine bromide, and of examining a large number of photographs exhibited by various members as specimens of their skill or illustrations of their researches. But the great attraction of the meeting was a special question of photographic chemistry treated by M. Bary with his usual talent: "The use of various solvents of pyroxyline in the preparation of emulsions." M. Bary also exhibited to the Society a novel instrument, which he calls the "chromographe," for obtaining, without the use of a lithographic stone or inking roller, a large number of copies of the same drawing. This instrument I have already brought to the notice of the readers of the PHOTOGRAPHIC NEWS in my correspondence which appeared in your issue of the 4th of April last. At the same meeting M. Davanne read a report on the "Causes of Halos," by the Committee on Emulsions.

Société Française des Archives Photographiques, Historiques, et Monumentales.—As I announced in my letter which

appeared in the PHOTOGRAPHIC NEWS of the 14th March last, this Society held its first scientific excursion on Sunday, the 6th April last. The wet weather of that day did not succeed in damping the ardour of the excursionists who had assembled at the Limours station; in spite of the rain they steadily worked through the programme of their expedition. Several photographs were taken by M. Letellier, the indefatigable director of the society, of the ruins of the feudal chateau of Chevreuse, as well as of views on the estate of the Dukes de Luynes at Dampierre. Let us wish the Society more favourable weather for their next excursion, which is fixed for the 20th of this month. On that occasion M. Guilleminot has promised to subject to trial the new travelling apparatus for photographers of his own designing, and several archaeologists will explain and describe the historical buildings which are to be the object of the expedition.

Miscellaneous News.—The lecture given by M. Pierre Petit, junior, on photography and its various applications, drew a very numerous audience, a fact which goes to prove that everything relating to our art-science has a charm for those desirous of knowledge, and meets with a favour that steadily increases on each successive occasion.

The definitive transfer of the valuable photographic business of M. Walery is the great news of the day, perhaps because the *dénouement* was so very unexpected. In the French Correspondence of the PHOTOGRAPHIC NEWS of the 22nd November last, the late Ernest Lacan informed your readers that M. Schemboche, of Florence, had entered into an arrangement with M. Walery to succeed him in his business. Now we learn that M. Schemboche will take over the establishment of M. Dupont, in the Avenue des Champs Elysees, while M. Dupont becomes the successor of M. Walery. This turns out to be the final result of a convention concerning which we have heard many contradictory surmises, but the question still remains whether the strife will cease from want of combatants. MM. Dupont and Schemboche will have to exhibit more ingenuity and activity than ever to establish a real competition against each other, after having concluded an amicable arrangement whose motive is not understood by the public. At the same time, it must be acknowledged that with private interests the public have no right to be concerned.

K. VERSNAEYEN.

ON THE SELECTION OF SUBJECTS FROM NATURE SUITED FOR PHOTOGRAPHY.

BY DR. ALEXANDER HUNTER.*

In the following paper prepared for this Society with some care, and after thirty-two years of photographic and artistic labours in India, I propose to discuss the subject of landscape art under the heads of *pastoral*, *agricultural*, and *industrial*, trusting that the photographs which I may be able to hand round and to lay on the table may serve to illustrate more forcibly what I wish to express, than anything I could say in mere words.

Landscape art opens up to the photographer, perhaps, a wider field than any other branch, yet I believe it is more difficult to attain to anything like eminence in pure landscape than in architectural or portrait photography, for the simple reason that it calls for a more thorough acquaintance with the principles of light, shade, composition, and general breadth of effect, than most of the other branches of photography. In fact, a real artist can show off his talent better in landscape photography than in any other department.

I dare say I may be treading on very tender ground by making such a broad assertion, but I do so after twenty-nine years' practical experience of photography in all its branches, and since the art was almost in its infancy. Now it has attained to what we, in our self-sufficient wisdom, are

inclined to look upon with complacency, as being pretty fair and honest progress towards perfection. I have no doubt that ten years hence, if any of us are spared to look back upon the labours of 1879, we will be surprised to think how easily we were pleased with what we were producing. There is one delightful encouragement that we all must have in our photographic labours, and this is a point that we should not be ashamed to acknowledge—at least three-fourths of our labour for which we take the credit is God's own work: we are fellow-labourers, but can do little more than prepare the paper, the chemicals, the apparatus, and other appliances. Let us be thankful that we have made the progress that photography can now show, but let us not be proud, conceited, or boastful, or we may have little future progress to talk of at these or other meetings.

But to proceed with more practical details. In the selection of subjects for pastoral photography, there are a few simple rules to guide us, that must be attended to if we would wish to produce a pleasing picture, and some of these are the same as those that would guide an artist in painting landscapes. The following are of primary importance:—
1. Whatever may be the subject selected, take care that the principal object does not come *bang* in the centre of the glass, or it may remind you of "here stands a post." 2. Get it a little to one side, with a smaller object on the other to balance or support it. 3. Don't get the horizon in the centre of the glass, with half for the sky and half for the picture, as this creates a difficulty with the details in the foreground, and throws a considerable portion of the nearest part of the picture out of focus, while it leaves the middle distance, which is often the most telling and important part of the view, out of its proper and relative position. 4. As a general rule, the best position of the horizon is one-third from the bottom of a picture, leaving two-thirds for the sky, hills, distance, &c. Bonnington, Collins, Creswick, and Sir Augustus Calcott, with many of the best artists of the Flemish School, have now and then kept the horizon one-fourth from the bottom, and this gives greater importance to the figures or animals which are in the foreground. If it is desired to represent views or scenery from a height, this rule may be reversed, and the horizon may be one-third from the top, leaving two-thirds for the foreground and near details. There is this danger, however, with the latter mode of treatment, that if figures or animals are to be introduced, they don't come properly into the picture, and either look dumpy, distorted, or as if they had been sat upon or were lying on their sides; and objects, animals, or figures from this standpoint should not be attempted in photography, as they will have an insignificance, and will sometimes appear as if tumbling out of the picture. To put this more pithily, you cannot take a good photograph, picture, or sketch of a man, from a position where you see the circular form of the top of his hat. Turner used to have a very laconic way of putting this: "Your own knees or your own toes will never make a good object in the foreground of a picture." 5. It is better to point the camera away from the sun, or slightly across the path of its rays, than directly facing it. 6. In bright sunny weather, the best views, I believe, are generally obtained in the mornings after the dew has risen, or before it begins to fall in the evenings. In India, we used to go out about 5 a.m., so as to be ready to work from 7 to 10, then home for breakfast and a bath, and perhaps a little time to read or to rest, luncheon at 1, and out again from 2 till 6 p.m., on rare occasions till 7 p.m. I have seen some good photographs taken when it was almost dark, but of course the exposure was then much longer. I have also seen good views taken in misty weather, and not a few during showers of rain; on the whole, I prefer a showery day with large white clouds, to a hot steamy day or a dull murky one. I have never worked at photography with snow on the ground, but I should think that with a moderately clear sky the quality of light would be good, though the position of the bright light is reversed by the snowy landscape, and the sky is often of a leaden grey. I have no experience of

* Extracted from a paper read before the Edinburgh Photographic Society.

work under a black Glasgow or Greenock fog, a London yellow peasoup-like fog, an Edinburgh murky fog, a grey, leaden Hampshire fog, a green Leith and Portobello chemical fog, a pure white Thames steamy fog, or a Haddington eastern haur, but this I know; that two, if not three, of these are prejudicial to health, and presumably to photography also.

We come now to the division of subjects into different classes. Pastoral landscapes are usually associated with flat, alluvial, or nearly level country, coast scenery, or views on rivers, such as we see in the pictures of Cuypp, Paul Potter, Bonnington, and a number of our modern artists. The difference, however, between photographs and pictures of this class is, that the artist has the power of introducing shadows and of concentrating the effects near the horizon, and of placing the figures, animals, or objects in such positions as will please the eye and assist the composition or general effect. All that the photographer can do is to alter his own position, or that of his camera, to try to get everything into the best possible position; but in doing this, an awkward branch, too large a stone, or an unfortunate blaze of light, or a hard cutting shadow, will sometimes spoil what would otherwise be a fine subject. As a general rule, for subjects of this class, it is well to select a clear open space immediately in front of the camera, and this avoids a difficulty. A windy day is often the source of a great distress to the photographer, by blowing about the trees, grass, or plants in the picture. Those in the foreground usually suffer most, as they seem to be shaken the most violently. It has been frequently objected to photography that it gives too clear, sharp, and cutting an outline, but this may sometimes be obviated by not focusing too sharply. I have occasionally seen artistic sketchy-like photographs produced where none of the picture was truly focused, but there is always a risk of producing a muddled effect.

By combination printing the artistic photographer can generally produce pictures alike pleasing and satisfactory in their results. If, however, the different parts are not artistically and skilfully combined, they can neither be pleasing nor truthful.

Agricultural subjects differ from pastoral generally in being more confined, and of a local character; in these there are points of peculiar interest that require to be seen closer at hand, and to be more clearly defined. Thus, for instance, views of coffee and tea plantations, and scenes on farms, with cattle, agricultural and other implements, require to occupy prominent positions. Skies are not required in such subjects, or a very little bit in an upper corner of the scene is often sufficient.

We had some interesting discussions at the last meeting of this Society on the subject of magnesium and other artificial lights. I did not think that that important subject received the attention it deserved, for some of the photographs were nearly as good as any of the portraits that have been taken by the light of the sun; they had a Rembrandtish effect, and remarkable definition. There is no doubt that the sun's rays give us the best light, but the quality of that light is very variable in different countries and at different seasons of the year. In the hilly parts of India, as of most other countries, it is usually better than in the plains.

The photographer has often more light than he wishes, especially in hot climates or during the middle of the day; under such conditions, the pictures are apt to come out too black and white, and to obviate this, dull rainy days are preferable, or working in the mornings or evenings, as I have already hinted.

I must now conclude by informing you that photography (as well as the fine arts) is making very rapid strides in India: many of the rajahs and wealthy natives practise photography with success, and keep assistant photographers in their pay; and I assisted in the establishment of thirty-three schools of Industrial Art in India, and one at Jaffa in Ceylon. Most of these are in a prosperous state, and are well attended and liberally supported by all classes of the

community. We commenced in Madras in 1850, and had within four months six hundred pupils, each paying one rupee or two shillings a month for instruction. I had eight teachers—European, East Indian, and Native—to assist me, and in twenty-three years we were able to provide situations for 2,020 young men. The work was begun as an experiment, not as a remunerative speculation; it greatly prospered, and now it goes on steadily and unostentatiously, without giving me any further trouble or anxiety.

Photography I found to be a great aid to art, and it surprised, astonished, amused, or excited the natives of India, but it did not rivet their attention so forcibly as the arts of modelling, carving, and sculpture, for these they understood and had practised successfully for many centuries, though often in a grotesque, rude and quaint, and sometimes in a questionable way in the decoration of their pagodas. Though India can boast of possessing some of the finest marble and bronze statues and busts in the world, the work of British artists, she cannot be said to possess much in the way of fine, pure, and elevating art. Yet she possesses, perhaps, the largest and most beautiful quarries of marble, alabaster, and magnesian limestones of every shade and colour at Aymere, Jeypore, Jubbulpore (this is the finest quarry of pure white marble, 2 miles in length, and 120 to 160 feet thick, yet the only use made of it is for mile-stones). There are other fine quarries in Madras, Burmah, and Pegu. Besides these, there are extensive quarries of serpentine, cidote granite, white granites, black marbles, &c., in the Madras Presidency, all lying comparatively idle.

We are doing a great deal to educate the natives of India, and they are grateful for it; but could we not turn some of these neglected resources to account, and then do the same for Cyprus, for Africa, and for Russia, which seem to be in need of peaceful occupations?

PHOTOGRAPHY CAN AID ART, AS ART AIDS INDUSTRY.

Come, sister dear, and lend thy willing aid
To catch those passing charms of light and shade
That flit about as if in lively play,
And while we gaze, so quickly pass away.
Just watch that little brilliant sparkling light
Dancing about as if in free delight,
Like sportive lamb, from rocky bank or glade,
Skipping o'er leafy bough, then lost in shade.
The brush or pencil in the artist's hand
Can teach us to perceive and understand
That glorious book which Nature spreads to view.
But, yet, 'tis granted only to a few
To read and represent God's work aright,
Thereby to elevate, improve, instruct, delight.

EFFECT OF PROLONGED EMULSIFICATION IN THE GELATINE-BROMIDE PROCESS.

BY CAPT. ABNEY, R.E., F.R.S.*

I HAVE ventured once more to say a word in the discussion on the gelatine emulsion, as perhaps some experiments I have made may throw a light on the subject of the greater sensitiveness of this process after long emulsification. I would first call your attention to a statement I made some time last year in one of my papers, that silver bromide is incapable of existing in close contact with freshly reduced metallic silver, and I shall take this for my text on which to found my argument. If we take collodion, and highly bromize it with (say) ten grains of zinc bromide to the ounce, and try and use this in a bath, we shall find that the silver bromide will be formed rapidly, but that it lies entirely on the surface of the film, so much so, indeed, that it can be wiped off with a tuft of cotton wool and leave the transparent film of collodion behind. If we take plates so prepared, and, after exciting in the silver bath and washing thoroughly,

* Read before the Photographic Society of Great Britain.

transfer them to a bath of potassium bromide, we shall find that we have increased density of deposit, a transparent film becoming nearly opaque. When these plates are washed and dried, let them be exposed beneath a negative in the printing frame and be developed. If one plate be developed by ferric oxalate, we shall find that we get an image developed at first, but that on continuing the development to attain density we shall get either a perfectly black film, or an image so dark as to be perfectly useless, large granules of metallic silver taking the place of a fine deposit. Let the other plate be developed with pyrogallol acid and acidified silver nitrate, the image will be found to develop of the proper density and of the most delicate character. Let us try and reason out the cause of this difference. In both plates the silver bromide is in almost a continuous layer; but in the one the bromide, acted upon by light, is reduced to a metallic state, and that forms sub-bromide with the next particle of unaltered bromide, and so on, till the action is stopped by a want of continuity in the bromide. In the other, metallic silver is only deposited in the sub-bromide, and there is no tendency for the image to spread; the discontinuity or continuity does not affect the result.

Take another plate similarly prepared, but not dried, and flow over it a weak solution of gelatine; dry it, and again develop by the alkaline method. It will be found that the development takes place regularly and evenly, and that a very fine result is obtained, though still rather coarse. Why is this? The gelatine impregnates the bromide, and on drying there is a distinct separation of the particles. Now we may proceed to consider the effect of the long emulsification of the silver bromide in gelatine. At every instant the particles tend to separate into a finer and finer state of division, and the gelatine separates them individually, till, after a lengthened emulsification, the particles are excessively minute, and completely enveloped by gelatine. On coating a plate with such gelatine emulsion, and after drying, no two individual particles are in contact (recollect, I do not say molecules, as there probably are thousands of such in the smallest particle); and if any particle has been acted upon by light, that colour will be reduced to the metallic state. The use of soluble bromide seems to be in forming a compound with the silver bromide, which prevents its reduction; in other words, metallic silver in presence of this double bromide does not have the same effect as it has on the bromide of silver alone; hence when these individual particles are thoroughly separated, there is no need of the restraining action of the soluble bromide. Each particle has an individuality of its own, and is independent of the contiguous particles, and has no effect upon them. Now collodion is essentially granular; that is to say, it is not a continuous layer, whereas gelatine is; hence in the one case the restraining bromide is required, and in the other, where the emulsification has been long continued, it is not necessary. With washed collodion emulsion, where the amount of pyroxyline has been diminished, the tendency to fog is greater than is ordinarily the case; but when a preservative such as albumen is used, it takes the place of the pyroxyline. In many cases the substitute is the better of the two. Thus in albumen-her plates prepared with the bath, no restraining bromide was required to bring out an unveiled image, and an immense proportion of ammonia could be used; and again, the addition of gelatine to the developer in some shape or another often renders soluble bromide unnecessary; for the same reason, the particles of metallic silver reduced from the sub-bromide being prevented from transmitting to the neighbouring particle of unaltered silver bromide by the viscosity of the gelatine. Regarding the increased sensitiveness caused by prolonged emulsification, the separation of the particles into a minute size favours this, since there is more surface on which the light can act, and there are also other considerations regarding the kind of light which is effective as you reduce the size of the particles, which also is favourable for it.

Experiments I have made favour this theory, if theory it can be called, but I shall hope that fresh light may be thrown on the subject during the discussion.

NOTES ON GELATINE EMULSION.

BY COLONEL H. STUART WORTLEY.*

THERE are one or two points to which I wish to call attention with regard to red fog. That kind of fog was quite unknown to me in actual work, and I think I have been able to trace the reason. I have always used nitrate of uranium in my emulsions, but on one occasion lately, having omitted it, I found red fog. Two emulsions, treated in exactly the same way, were then tried, one with nitrate of uranium, and one without. Here is the result: red fog developed in one, not in the other: the plates showing clearly the fact.

I also wish to draw attention to the fact that a very powerful action is brought to bear on the gelatine by the silver. In this bottle is gelatine exposed to light with silver in: in this one collodion with silver in. Note the difference, and you will see how powerful an influence is exerted in one case, and not in the other.

Now, some years since I pointed out that washing collodion emulsion with hot water robbed it of some valuable property, and I now find that a very great deal of the varying results of gelatine work is due to variation in the washing. When exposing with Mr. Bennett the other day, I was struck by finding but little difference in the two plates—one prepared at considerable heat, one rather cool—and I feel sure that our plates were so much alike because we both wash according to what our plate requires.

I will go more carefully into this subject, and bring it forward again in the future. I believe that this question of washing greatly affects the keeping qualities of plates, as I remember that among some samples of plates that were sent round the world, after being exposed, to test their keeping qualities, one set developed quite perfectly, and this set had had a special method of washing.

I mentioned at the last meeting that I had tried all kinds of plates and formulas since Mr. Burgess first sent out his capital plates and emulsions in 1873, and that I had not found any plates equal to Mr. Bennett's, with the exception of those I prepared myself, and I think that the original starting-point of all us washed emulsion workers should now be reprinted. This, then, is from the *British Journal*, Nov. 14, 1873:—

"*Hints to Gelatine-Bromide Workers.*—I hope the following hints to gelatine-bromide workers will be found useful:—To make the gelatine-bromide emulsion, put half the gelatine to be used into one vessel, and the other half into another. Now pour as much bromide of cadmium solution into one of the vessels, and as much nitrate of silver solution 'measured' into the other, as will cover the gelatine. 'The strength of solutions will depend on the quantity of silver bromide required in the gelatine.' When the gelatine is swelled sufficiently, pour the solutions off and measure; by that means the quantity of bromide and silver taken up by the gelatine will be ascertained. Keep the bromide in excess of its equivalent of silver by adding bromide solution, if required. Heat both the quantities of gelatine until dissolved; then mix, stirring with a glass rod. Let it stand till cold, cut in slices with a piece of thin glass, and wash in distilled water, to remove the excess of bromide."—J. JOHNSTON.

It is only necessary to point out that here are the two great principles on which now much stress is laid: "Keep the bromide in excess," "Wash to remove the excess after solidifying it into pellicle." No such instruction had ever appeared before, though it reappeared six days afterwards in Mr. Kennett's Patent of Nov. 20.

* Read before the Photographic Society of Great Britain.



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A NOVEL ACCELERATOR.

A SOMEWHAT novel method of shortening exposures in the studio is claiming some attention in the United States. Mr. D. N. Carvalho, writing in *Anthony's Bulletin*, announces that he is able to reduce the exposure at the rate of from thirty-three to sixty per cent., simply by painting the whole interior of the studio, walls, doors, sashes, and floor one uniform tint, which he describes as "orange pea-green"! He materially shortens discussion on the subject by emphatically placing it as a matter of proved fact. He was quite prepared, he states, to find that his statement "would lead to controversy and doubt as to the correctness of it as a theory; and likewise, that sceptics and others should express their doubts of it as a matter of fact was also to be anticipated: all new discoveries, and more especially this one, in direct conflict as it is with all the accepted theories for the past thirty years or more, would, in the ordinary course of events, be subjected to the 'fire' of scientific and other opinions. This has in a great measure come to pass. 'Authority' after 'authority,' have been placed before me, all bearing against the above statement; but, notwithstanding all this, it still remains an actual fact that a gallery painted of the 'orange pea-green' already mentioned will absolutely shorten exposure from thirty-three and a third to sixty per cent., according to circumstances. Not only this, but the shadows will be softer, the expression of the sitter's face more pleasant, there being no intense light to trouble the eyes; and, lastly, you need no change to be made in your regular chemicals, apparatus, &c. The matter ceased to be an experiment long ago, as my many letters from those who have been enabled to see through the 'spectacles of doubt,' and trying it, found, much to their surprise, that they could hang up (there to remain) the past thirty years of theory, and take to 'practical results'; more so, when about one-half time, or more, in 'exposure' was gained. Thus—"though a man convinced against his will is of the same opinion still," as quoted by some one, I don't remember who—in this case one must believe, because 'practice' proves itself always never failing."

The curious part of this singular announcement is, that it is fully confirmed by communications in the same journal from well known photographers of good standing. Amongst these are Mr. Estabrooke, of New York, and Mr. Ryder, of Cleveland. Mr. Bash, of New York, states he finds it enables him to reduce his exposure one-half; and Mr. E. Decker, of Cleveland, finds it permits a similar reduction. It has been proposed before to paint the interior of the studio blue, so as to secure the aid of adventitious light as an accelerator, and it has been proposed to paint the interior black, so as to secure brilliancy by shutting

off all adventitious light. But, until now, it has not been proposed, we think, to accelerate photographic action by colouring the interior of the studio with an essentially non-actinic colour. There is an old paradoxical saying to the effect that nothing is so certain as the improbable. The paradox seems to be verified by Mr. Carvalho's experience.

HYPOSULPHITE AS A THERAPEUTIC AGENT.

OUR transatlantic contemporary, *Anthony's Bulletin*, contains a communication from a correspondent proclaiming the rare virtues of hyposulphite of soda as cure for erysipelas. Medical men are familiar with the use of hyposulphite as a somewhat active aperient, and it is regarded by some as very valuable in removing impurities of the blood; but it has not come much into use in medicine. We place the new claim for it on record, but would caution our readers against experimenting with disease. Erysipelas is too dangerous a malady to be tampered with, and should be placed under the treatment of a competent medical man. We subjoin the communication in question:—

"I take pleasure in communicating the needed information concerning the virtues of hyposulphite of soda in erysipelas. Of course, when erysipelas proceeds from a wound it is more delicate to manage, and requires the best surgical skill; but when it is of the milder form, on the outside skin in the face or any other part of the body, proceed as follows:—Take of hyposulphite of soda any quantity, and make a saturated solution in a bottle of any convenient size—six, eight, or ten ounces. If the individual is a strong, hearty man, and the disease has a good start, give your patient one tablespoonful every hour for twelve hours; then decrease the dose, as the benefits become manifest, say once in three hours. It may cause diarrhoea; but never mind, it will destroy any febrile symptoms. Twenty-four hours is generally sufficient to produce a decided change for the better, unless it has six or seven days' start, in which case it will take longer. The results are generally so wonderful that I have never known the remedy to fail. With an old person you may substitute a teaspoonful for the tablespoonful, and once every two hours. You may put this down: that the sooner you can get a good quantity of the soda solution into the body, the sooner the trouble will be over. Now for an outward application: use equal parts of the soda solution and glycerine; saturate cotton flannel with the above, and lay on the part affected. Eat simple food—avoid all exciting food and drink; farinaceous diet is absolutely necessary. If you can bathe the part affected with the above solution, do so; then lay on the saturated cotton.

"Hypo is equally as efficacious in any poisons from insects or vegetables; old wounds in sores are soon healed by washing the parts in a solution of soda. It is also good in typhoid fever, carefully administered.

"Now if a person has a form of erysipelas that is not so decided, but (say) chronic, let him take a teaspoonful every night of the solution, and the disease will be entirely removed, if kept up for a month. The disease seldom or never attacks a person the second time when eradicated by the soda treatment.

"If any other information is needed, I shall be very much pleased to communicate, for I consider the foregoing has saved my life, and it has cured fifty persons in succession without fail right under my own supervision."

A MODIFIED IRON DEVELOPER.

MR. J. DE WITT BRINCKERHOFF, an old photographer in the States, gives in our New York contemporary a developer, of which he speaks in very high terms, as never fogging, however much pushed. It is a modification of a

developer some time ago published by Mr. Henderson. We now quote Mr. Brinckerhoff's own words.

Protosulph iron	...	...	3 ounces
Alum (pulv.)	...	...	5 "
Water	...	...	2 quarts

Filter, and, for use, add to each twelve ounces of the above half-an-ounce of acetic acid, No. 8. Alcohol is not required, unless the bath is highly charged, and when the developer does not flow evenly it is best to evaporate the alcohol and ether.

"I find this developer perfectly compatible with the bath solution, a few drops of which may with entire safety be poured on the plate at any stage of the development without fogging in the least, and any intensity gained that is required; but with proper exposure all the detail is brought out, resulting in a perfect printing negative, without any continuator being necessary."

A PHOTOGRAPHIC PARADOX.

BY CAPT. ABNEY, R.E., F.R.S.

THE above is the heading of a leader in the last issue of the PHOTOGRAPHIC NEWS, and, as the Editor implies, like most paradoxes, it is only one in appearance. Mr. C. S. Murray states correctly Mr. Cooper's dictum regarding the proportionate exposures necessary to give gelatinobromide plates and wet plates in different lights, and he also correctly states my opinion as to the cause, though he fails to see exactly what I intended. I will try and explain. Is it true that a gelatine plate can be a thousand times more rapid than an ordinary wet plate? It looks admirable on paper to state that such gelatine plates exist, and it is perfectly true that they are extant, and if, instead of a thousand times more rapid, I were to say infinitely more rapid in both cases, I should still be telling the truth—but not all.

We have heard of the late Mr. Claudet taking a sensitive Daguerreotype plate into his studio and exposing it to the light that penetrated into it, and on developing such a plate found no trace of the action of light. This, as it stands, is true, and yet only partly true, for the kind of light that penetrated into the studio is not stated; but when it is known that the light was that which pierced through a dense London fog, the wonder ceases. Had Claudet taken a gelatine plate into the studio at the same time as he took the Daguerreotype plate, and developed it, he would not have found the plate free from evidence of the action of light. If the light which always had access to our plates was such as came through a London fog, it would be exact to say that a gelatine plate was infinitely more sensitive than a Daguerreotype plate. The same argument applies to the gelatine plates and those prepared by the wet process.

Now we come to the fact that the former have a greater proportionate advantage in winter than they have in summer. It has been my fate to have a good deal to do with photographing the spectrum at all seasons of the year, and in winter the blue rays are largely deficient as compared with the yellow and green rays, taking their proportion as existing in the light of a bright spring day. It is a well-known fact that aqueous vapour cuts off the blue and the upper part of the spectrum: the more vapour present and the greater thickness of atmosphere through which the light has to travel, the more this part of the spectrum is absorbed. In winter the air is, as a rule, more charged with aqueous vapour, and the altitude of the sun is many degrees less than in summer. Hence we have a reason for the less proportion of blue rays in the former than in the latter season, in comparison with the yellow and green rays, which are not cut off to nearly the same extent by the above causes.

For the sake of example, let us suppose that the relative chemical activity on silver bromide of the chemically

active rays of the spectrum on a summer's day, when empirically divided into yellow, green, blue, violet, and ultra violet, are—

Yellow	Green	Blue	Violet	Ultra Violet
10	40	100	100	10

and that in winter all the ultra-violet, $\frac{1}{20}$ of the violet, $\frac{1}{10}$ of the blue, $\frac{1}{4}$ of the green, and $\frac{1}{2}$ the yellow rays are cut off; then the relative value of chemical activities would be—

Yellow	Green	Blue	Violet	Ultra Violet
5	10	10	5	0

In summer the total activity would be 260, and in winter 30.

For a wet plate the chemical activities would be confined to the blue, violet, and ultra violet. In summer, therefore, the total chemical activity for it might be 210, and in winter 15.

The relative values of a wet plate to a gelatine plate would be in summer as 10 to 8 nearly, and in winter as 10 to 5.

In reality, the absorption is much more than the above, and photometric measurements of light on a winter's and summer's day show that the light is very much yellower on the former than on the latter.

The British Association has appointed a committee to fix a standard of white light, and when our labours are concluded it will be easy to show in a proper manner that what is now considered as white light may be very yellow or very blue as compared with the standard. The blue rays do not neutralize the action of the yellow rays, as Mr. Murray suggests. I think I have conclusively shown in previous experiments that what used to be called the antagonism of different rays is non-existent; and let me suggest that to glaze the studio with yellow glass would be a worse than useless expense.

In the column headed "Photography In and Out of the Studio" for last week I see the writer has given Messrs. Bolton and Sayce the credit for the introduction of the gelatine emulsion.* It should be given to Dr. Maddox and Mr. Burgess, if I am rightly informed.

GLASS SUITABLE FOR DARK ROOM WINDOW

BY W. BEDFORD.†

THERE are one or two points in Captain Abney's paper read at the last meeting I should like briefly to touch upon, as, owing to the adjournment of the discussion, I have had the opportunity of making a few experiments in a similar direction, and I now lay the result before the meeting.

I believe I am right in surmising that Captain Abney, in photographing the absorption spectra of the various coloured glasses employed, made use of a single thickness only in each case, and gave the same exposure to each, without reference to the quantity of light transmitted, and in making a practical selection from them it is essential to bear this in mind.

In my own experiments I have confined myself to the trial of four different samples of glass, viz., orange, stained red, ruby, and deep ruby. The first-named is mounted in one, two, and three several thicknesses, and the deep ruby may be reckoned as equivalent to two thicknesses of the ordinary.

Now, to pass on to the results. With bromo-iodide wet collodion, the single orange is undoubtedly the first to fog, closely followed by stained red, and then ruby; but it will be seen that the two thicknesses of orange are far superior to the ruby in absorbing the actinic rays, and at the same time transmit more of the luminous rays, while the three orange and deep ruby have each, during this exposure, intercepted the actinic rays sufficiently to prevent reduction. The other

* Our contributor, in speaking of the origin of the gelatine emulsion process, was doubtless thinking of the collodio-bromide process, which was introduced by Messrs. Sayce and Bolton. The origin of the gelatine process is not absolutely decided. Some claim it for Mr. Kennett. A gelatine emulsion with chloride of silver was patented in 1865.—Ed.

† Read before the Photographic Society of Great Britain.

negative is developed on collodion bromide (and the effect is the same on gelatine bromide): it is evident here also that the ruby glasses possess no advantage over the two and three thicknesses of orange glass respectively.

Of course, it must be understood that I do not for a moment call in question Captain Abney's results, which, indeed, are fully corroborated by these rough experiments. I would only urge that it is unnecessary to submit to the trying glare of ruby-coloured light, when we can avail ourselves of one of which is far more agreeable to the eyes, and equally efficacious.

GELATINE PLATES IN THE STUDIO.

BY SAMUEL FRY.*

THE very interesting discussion of last meeting, and the remarkable nature of the results shown, induced me to extend the experiments I had already made, and to at once institute very careful trials. The large proportion of the weather since then has been bad, but during the brief period of fine days I have had a great success. I believe I shall not use collodion and the bath again, unless unexpected difficulties arise. The exposure is about one-sixth that of wet collodion, and no difficulties attend development. I had, before going into the practice on any scale, witnessed the operations of others, and was much discouraged by finding they worked in a room so extremely dark as to be miserable in the last degree. I am able to say this is entirely needless. In my laboratory, which is a large apartment, are two windows about 6 by 4 feet. These are covered with four thicknesses of the well-known thick yellow paper, leaving abundant light for all purposes, and quite harmless to the plates. It is a great relief to have no smell of collodion or cyanide, and to be able to conduct the development without soiling the fingers. The tendency of these plates is to run to half tone, whilst collodion has just the opposite inclination.

A remark was made at the last meeting by our old friend, Mr. Francis Bedford, which much impressed me. "How," said he, "will you manage when you want to bring up some faulty part of the negative, and give it more force?" I may reply to this, that the effects seen on these plates are more equable, and more just in their proportions of effects, than is generally found in collodion work. In fact, they do not require that separate parts shall be reinforced, the correct gradations being a striking characteristic of the system.

I find I must prepare my own plates, and, thanks to Mr. Bennett, who has so generously given this process, there will, I am told, be no special difficulty. By this method you get rid of plate-cleaning, albumenizing, collodion, nitrate bath, and cyanide. The saving of time is enormous, and the quality and rapidity invaluable.

Correspondence.

ARTIFICIAL LIGHTING.

SIR,—Mr. Harman need scarcely ask if he is again perverting my meaning, because it must be palpable to every thoughtful reader of my recent letter on the above subject that he is again doing so in stating that when taking certain chance customers on dark days, I occasionally found it desirable (in order to secure prepayment, and, consequently, reappearance, for another sitting) to show them the under-exposed negative, which I contend, and presume Mr. Harman will not deny, is equivalent to showing them a positive. I say, in stating this—though I did not deem it necessary to enter so minutely into details in order to make myself understood by the most ordinarily intelligent photographer—I did not infer that I did a "positive" trade, as Mr. Harman's remarks would suggest; on the contrary, I can, with that gentleman, claim the honour

(if such it be—certainly such he considers it) of total exemption from that class of business, both as regards the past as well as the present. As for there being anything degrading in the occasional practice of what I consider a most justifiable "trick," I must leave it to all common-sense business men to judge, more especially those who have had dealings with uncertain sitters, and wasted their time and material for nothing. If Mr. Harman has had no such painful experiences, he is to be congratulated.—Yours faithfully,
VINCENT HATCH.

ARTIFICIAL LIGHT PHOTOGRAPHY.

DEAR SIR,—I am pleased to see that my letter on the above subject has been taken up, and served to ventilate the subject more fully, which tends to prove that there are two sides to every question, and I, in my zeal in advocating one side—that of perfecting what we do know—have neglected the other side—that of experimental research. But I would not for a moment have any one to think that I am opposed to any innovation or additions to our knowledge which increases the usefulness of, or is any improvement to, our art; in fact, I think the tenor of my letter partook of a call on photographers to improve their work artistically, not to work so mechanically, just putting a sitter against the head-rest, exposing a plate, "your name and address, please," and perhaps money, and so the matter ends.

Now there is a wide difference, as you know, sir, between exposing a plate in the camera, and taking a "picture;" and one idea in my mind, when penning my letter to you, was, that this artificial light just provided the means of giving an image on the sensitive plate, and that was all, at least in most hands, as it must be more difficult to make a "picture" by the artificial light than by daylight, so that thus these "plate exposers" would be multiplied to the detriment of the art, for, being carried away, also, by the novelty of making negatives by the artificial light—the main point of which is, I presume, to get an image at all—they would lose sight of artistic excellence. More still, I also took exception to the expense. Well, that plea must go to the wall, as it has been shown that artificial actinic light can be produced for a mere trifle by these pyrotechnic compounds, and more effectual and certain than the costly electric light. But I will not review all that has been written by your correspondents and by yourself relative to my letter; suffice to say that I have read and noted them all, and benefited thereby, all of which shows, as I have written before, that there are two sides to the question; for who knows where this experimental research may end? There doubtless will be some benefit derived. Perhaps great results may lead therefrom; for instance, although it may be very Utopian to fancy that it might lead to the discovery of photography in colours, it might. How, I cannot say; for by the present means and tools it seems as far off as ever, and fresh ground will have to be broken. *Apropos* of this, Swan's dry plates appear to be more sensitive to yellow or dull rays than to the rays that are generally considered most powerful on the sensitive plate, and these may be eventually the bye-roads—perhaps the high-roads—to such a consumation, just as past research has been to the art's present efficiency, which the profession, through the artificial light, seem to be in danger of deserting, and which, in my letter, I advised them not to do, similar to the advice you gave last week, not to throw old discarded silver baths away, in case the dry plates do not answer so well in the summer light.

But Mr. A. Clarke, in your last issue, quotes part of my letter, which I must note, as to the characteristics of pictures taken by the artificial light, namely, they having "unnatural waxy skin, glassy eyes," &c. Well, all I have seen were so; but they were taken by the electric light, some time ago, and no doubt improvements by the

* Read before the Photographic Society of Great Britain.

means of reflectors and diffusers of the light, to give softer effects, have been devised, so as to make them produce a different class of picture to what I saw and described, of which you say "There is nothing to distinguish them from ordinary good work by daylight," which remark I have not seen in the NEWS, and have not the back numbers by me at present. But still, none would use artificial light when they could procure daylight, no more than anyone would shelter a garden from rain and water with hose and tap-water; and I do not dispute that there are occasions when it would come in usefully, just as the hose, &c., do in a dry season. Mr. A. Clarke gives an instance at the fauzy dress ball, where being photographed would be one of the chief items of the programme, through its novelty; and if the possibility was wider known, it would be somewhat of an incentive to holding fauzy-dress balls, and might be even called in at ordinary parties and balls. But the principal reason why I must notice Mr. A. Clarke is that he accuses me of "judiciously" concealing my name under a *nom-de-plume*, namely, "Decor Inemptus," at which I feel somewhat nettled, and so beg to sign myself.—Yours truly,
Hull. W. BARRY.

HOW TO STEADY A CAMERA IN WINDY WEATHER.

SIR,—I beg to forward the following for insertion in the NEWS:—Procure two pieces of stout iron wire about twelve inches long; bend one end of each into the form of a hook, and sharpen the other to a point. To use them, push the pointed end of one wire into the ground at an angle of about 45°, immediately under the camera; do the same with the other wire, but in the opposite direction, so that when in position the two hooks will be side by side, thus forming a kind of bridge, which would require a very strong upward pressure to remove. Now get a stout piece of string; make a loop at one end, and slip it over the screw which fastens the camera to the tripod. The other end should then be fastened by a few turns round the hooks, pulling it tightly before making the final fastening.

I got this idea from an artist, who used the hooks to steady his easel, and I have since found it of great use for the purpose I have named.—I am, sir, yours truly,
Westcott, Dorking. CHAS. BROWN.

PHOTOGRAPHS BY COAL GAS-LIGHT.

DEAR SIR,—Since my first essay at portraiture by gas-light, described in last week's NEWS, I have had the Wigham burner fixed in my own gallery, and have already succeeded in taking portraits with a moderate exposure. When the burner was fixed ready for use on Wednesday last, I at once saw that the gas had not previously been sufficiently turned on to attain the highest degree of illumination. With the gas at full cock and by the use of special and carefully prepared chemicals, the exposure was reduced one half. By a readjustment of reflectors, I still further shortened the exposure. The wet process used was that of M. Boissonas, of Geneva, the genuine formula for which I have only recently received from himself.

I am alive to the sensitiveness of gelatine emulsion, and have tried Swan's plates. They are exceedingly valuable for this new class of work.

Having written for any suggestion that Mr. Wigham might have to offer, he advises the use of his sixty-eight jet burner as giving a white intense light, more than three times the illuminating power of the one I am using. It is probable that the actinic power is also proportionally increased.

In these experiments I have been greatly aided by Mr. Halliday, of Newcastle, who has introduced this burner into the North of England, the price of it being £5.

Enclosed you will find as many cartes as I have by me, some of them taken in one minute. The gentleman in the soft felt hat called by request to see the light. I had no intention of taking him, but when he sat on the chair just vacated by the lady with hat, I was so struck by the lighting, that I at once secured a negative. It is very likely that I may try the larger burner, if so, will let you know with what success.—I am, sir, yours truly,
P. M. LAWS.

PS.—I purpose writing you specially of M. Boissonas, and my opinion of his process.

[We shall be pleased to hear again from our correspondent, both on the gas-light portraiture and the process of M. Boissonas. The examples of gas-light portraiture, enclosed are admirable.—Ed.]

Proceedings of Societies.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE sixth ordinary meeting of the session was held in 5 St. Andrew Square, on Wednesday, the 2nd inst., JOHN LESSELS, Esq., President, in the chair.

The minutes of the previous meeting having been approved, the following gentlemen were unanimously elected ordinary members of the Society:—Messrs. J. B. Lawson, L.A., and Mr. W. Balfour.

DR. ALEXANDER HUNTER then read a paper on the selection of subjects from nature suited for photography (see page 183). The paper was illustrated by a very large collection of Indian photographs, many of them of a highly interesting nature.

THE PRESIDENT thanked Dr. Hunter for submitting to the Society such a large, interesting, and varied collection of photographs, the results of his own labours in India, and for the large amount of information concerning Indian life and manners.

MR. W. NEITSON doubted if landscape photography was more difficult than that of portraiture. A prolonged experience as a professional portrait photographer had confirmed him in the belief that the latter was the most difficult branch of the art. He recommended landscape photographers to discard the cumbrous appliances necessitated by adopting the larger sizes for landscape negatives, and strongly urged the desirability of taking perfect small negatives, which, with the extremely rapid exposures now possible, enabled the photographer to secure figure and cloud as they were in nature, without the necessity of resorting to combination printing; the gelatine film, being so structureless, would bear any reasonable enlarging without deterioration, and the resulting large pictures would be far superior to similar sizes taken direct from nature, besides being produced with less trouble and expense.

MR. W. H. DAVIES reminded members that Mr. Lindon Smith had been famous for his landscapes with mist and cloud, and for his beautiful results had obtained a medal from the Photographic Society of Scotland. Dr. Silvey had also made a speciality of landscapes taken during rain, and some of his chief works owed their peculiar charm to this condition.

MR. JAMES HOWIE considered that as the chief beauty of all photographs consisted in the minuteness of the rendered details, the presence of mist and fog could be nothing but deleterious, and he believed that distant objects must most materially suffer.

DR. THOMPSON, R.N., said that he believed the cause of the peculiar beauty of many pictures taken in rainy weather might be traced to the fact that when the air was charged with moisture it contained less floating particles to obstruct definition. It was proverbial that in a dense state of the atmosphere distant objects looked near, or, in other words, were more clearly or definitely seen.

MR. M. G. DOBBIE thanked Dr. Hunter for so kindly responding to his request to provide matter for that evening, and congratulated the Society on possessing a member that had done such important services for art and art education in the Indian empire. He proposed a vote of thanks to Dr. Hunter, which was heartily accorded.

MR. JAMES CRIGHTON exhibited a series of Chinese photographs, consisting of landscapes, architecture, and domestic scenes, which were examined with much interest.

The following two questions were found in the question box:—
1. What is the best filtering material for gelatine solution?

2. What is the best means to get brilliant prints from very thin negatives?

1. In reply to the first, it was elicited that sponge and glass-wood had been employed with success, but for ordinary emulsion work it was merely necessary to tie a piece of muslin over the mouth of the containing vessel, allowing the emulsion to run through this on to the plate; the muslin effectually prevents the passage of solid particles and the occurrence of air-bubbles. A small hole must be provided for the admission of air. To remove the yellowish tint inherent to some gelatine films, it was recommended to decolorize the gelatine by means of clean lumps of fresh animal charcoal.

2. A highly salted paper, sensitized on a strong silver bath, exposed under the negative in a very subdued light, so as to take a long time to print, was said to be the best for thin negatives. Some found fuming the paper with ammonia to be an improvement.

Votes of thanks to Mr. Crighton and the President terminated the proceedings.

PHOTOGRAPHIC SOCIETY OF BERLIN.

At the meeting of the 6th February last, Herr C. BRASCH, President of the Society, in the chair,

Herr E. DUBY delivered a lecture on "Artificial Light for Photographic Purposes," illustrated by experimental demonstrations. The principal requirements of such light are, as he pointed out, that it must be as rich as possible in the chemically active rays. The light from common coal gas can be improved by making the gas, before it reaches the burner, pass through a U-shaped tube fitted with loose cotton wool which has been steeped in naphtha, benzine, or paraffin. A stronger and highly actinic light is obtained by burning easily combustible substances, such as sulphur and phosphorus in pure oxygen gas. A mixture of the vapour of carbon disulphide and nitric oxide, or oxygen alone, burns with a bright flame, which is rich in the chemically active rays; but, in spite of every precaution, the mixture is liable to explode. For practical purposes the light devised by Haruecker is very valuable; this is a modification of the ordinary oxy-calcium light with coal gas, where the vapour of alcohol is substituted for the latter substance. To produce a still brighter light a jet of pure oxygen gas may be passed through burning hydrogen, and the resulting highly heated flame directed on a cylinder of lime or magnesia. In conclusion, the lecturer exhibited the light obtained by burning the metal magnesium; this is an excessively actinic and intense light, but is attended with the disadvantage of being very costly, while, as yet, no satisfactory lamp has been devised for burning the magnesium regularly. Three different kinds of shutter for the objective were exhibited and compared. The first of these, by Vogler, is set in motion by the pull of a string, and is distinguished for its simplicity and cheapness; the second, the well-known pneumatic shutter of Cadett, is expensive, and, as was objected by one of the members present, is apt to startle the sitter on being sprung open; in the third, the invention of Herr Grundner, the last named difficulty is obviated by causing the shutter to move within the instrument, but a fear was expressed that the principles of its construction would infringe the patent of Cadett.

The next meeting was held on the 20th February, when Herr C. BRASCH again presided.

Herr E. DUBY gave a lecture on "Oxygen, the Methods of its Preparation, and its Importance in Photographic Work," at the end of which he exhibited a new oxy-hydrogen burner for use with ordinary coal gas, giving a very bright light, which was highly approved. When the cheaper method of obtaining oxygen described in the lecture shall have come into general use, there is no doubt that this burner will be extensively employed.

Apropos of oxygen, Herr HAMMER, the chemist, who was present at the meeting, gave an interesting account of the liquefaction of that gas.

With reference to the exhibition of the oxy-hydrogen light, Herr TH. JOOR inquired whether an oxy-paraffin lamp could not be constructed. The lecturer replied that lamps of the kind indicated had already been made, but that they gave no satisfactory result; without a chimney they were apt to smoke, and if a chimney were used it would be sure to fly. Though the first of these defects might be mitigated by adding naphtha to

the paraffin, and the second by the use of toughened glass chimnies, still some good substitute must be found for paraffin before lamps of this sort could be brought into use. Under no circumstances should ligroin be used in a lamp, on account of its explosiveness.

Herr JUNK submitted to the notice of the meeting a number of positives taken by him by means of the carbon process; the opinion was unanimously expressed that these pictures would bear comparison with any produced in the same way.

Herr C. SUCK stated that he had taken positives both by the emulsion and by the tannin process, and that he preferred the latter for enlargement purposes, as the positives obtained by that means possessed greater transparency. With respect to the tannin process, the views of the meeting appeared to be that the dry plates produced by it were not very permanent, in consequence of tannin being an unstable compound which is apt to be converted into the less energetic ferrotannic acid. It was also complained that the silver iodide film was apt to detach itself from the glass plate; but as a remedy for this defect, Dr. STINDE recommended warming the plate before developing.

Dr. STOLZE recommended dry plates with coffee, as possessing much greater durability.

Some of the pictures taken by M. BOISSONAS, of Geneva, with his "extra-rapid" process, had been sent for exhibition, and were pronounced to be really "instantaneous views." With reference to this subject, a question was asked as to the so-called instantaneous process of Herr Fricke, in reply to which Herren GERICKE and VÖGLER, each of whom had purchased the licence, declared that they had found it to work no quicker than their own chemicals.

PHOTOGRAPHIC SOCIETY OF VIENNA.

An ordinary meeting was held on the 18th February, Dr. E. HORNIG, president of the Society, in the chair.

Herr MARTIN, Imperial Counsellor, exhibited some of the solar photographs taken at the Observatory of Moudon by M. Janssen, and addressed some remarks to the meeting on the subject. These remarks were to a certain extent a reproduction of the notice in the *Comptes Rendus*, as the photographs had arrived in Vienna without any accompanying explanations. Janssen has succeeded in producing these intensely interesting and instructive photographs by reducing the exposure to the extremely short duration of 1/3000th of a second, at the same time producing the picture on a very large scale; those exhibited at the meeting were on the scale of 1.38 metre for the diameter of the sun's disc. The short exposure is obtained by causing a screen with a small aperture to pass by means of a spring with extreme rapidity in front of the eyepiece of the telescope used as the photo-heliograph.

It is well known that the sun's surface, when viewed through a telescope, appears to be covered with granules, which may be compared to grains of rice lying close together on a plane surface. This granular appearance is seen quite plainly in the photographs, and when they are looked at with the light at some distance, there will be observed spots of greater and of less sharpness, which seem to stream out beside each other in vortex figures. The disturbed and quiescent parts of the solar surface can be distinctly recognized by the different intensities of the radiation; this variation in intensity is only shown in consequence of the shortness of the exposure, for with a longer duration of exposure the whole face of the sun would appear equally white in a photographic positive, and dark in a negative. The speaker went on to explain the external constitution of the sun, which, as far as known, consists of the photosphere, the reversing layer, the chromosphere, and the corona; and also the photographic experiments of Dr. Draper, by which he believed that he had proved the presence of oxygen in the solar atmosphere. According to Janssen's own views, the mere fact of the great diversity of form of the granulations in the photosphere tends to show that these elements consist of a very mobile substance, which easily yields to external influences. This is a property of a fluid or gaseous condition; other considerations, however, lead to the conclusion that the condition of the granulations is analogous to that of the clouds in our own atmosphere—that is, that they consist of a solid or liquid substance in a state of fine subdivision floating in a gaseous medium. In the course of his observations Herr Martin alluded to the urgent necessity for the establishment of an observatory in Vienna for experimental

solar research by photography, and recommended the Society most strongly to keep this object in view.

The PRESIDENT, in thanking Herr Martin for his interesting discourse, remarked that the idea of a photographic observatory in Vienna was one with which he had been familiar for years; but he feared, however, that the position of the Society was not yet such as to warrant it in entering on an undertaking of so great magnitude, and times were not just now propitious for claiming State aid. From another quarter, however, he had hopes of attaining assistance towards the realisation of the project, the details of which he was not just then at liberty to explain. He had, consequently, strong hopes that, if not during the present year, at least within a very short time, steps would be taken towards the foundation of such an institution, and so soon as something certain had been decided on, he hoped to be the first to communicate the particulars to the Society.

Herr LUCKHARDT seized the opportunity of offering to their President the congratulations of the Society on the high distinction he had obtained by the Emperor's conferring on him the order of the Iron Crown.

Dr. HORNIG, in returning thanks, assured the members that he had always to the best of his knowledge and ability worked for the interests of the Society, and would still continue to do so; by reason, however, of his continued ill-health, and on account of other engagements, he must claim the indulgence and active assistance of all his fellow-members.

In a discussion on the question where the best dry plates for landscape views could be obtained, the President remarked that the great majority of photographers in Austria employed exclusively the wet process; and that the few who occasionally resorted to the dry process were in the habit of preparing their own plates. One great hindrance to the importation of dry plates from abroad was the regulations of the Custom-House, so that the trade in these plates, so far as the Austrian Empire was concerned, was a very small one. In England there appeared to be a great traffic in dry plates, the manufacture of which had been undertaken by special houses, probably in consequence of the large number of amateurs who pursue photography as an amusement.

Herr VON MELINGO believed the subject to be well worthy of the attention of the Society; he had himself been often put to straits for want of an establishment where he could obtain reliable dry plates. He expressed a wish to know whether at the dealers in photographic requisites there was a great demand for dry plates; and in reply,

Herr KIRSCH stated that the customers of the firm of A. Moll and Co., for these articles, were very few. Since then this house has been appointed sole agents for Austro-Hungary, for the gelatine emulsion plates of Messrs. Wratten and Wainwright.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

At a recent meeting President NEWTON in the chair, the minutes of the last meeting were read and confirmed.

After some routine business the PRESIDENT exhibited to the Section a print or photograph as a curiosity, and said: What gives it interest is the fact that it is printed on paper sensitized three years and nine months since. I found one peculiarity about the paper. It would break when bent at a short angle; when put in water, however, it assumed its normal condition of toughness. After the paper is sensitized in the ordinary way and hung up, as soon as it stops dropping, wipe the silver off the bottom, before it begins to curl at the edges, and lay it back down on a dish of water containing one ounce of hydrochloric acid to forty ounces of water.

The PRESIDENT also exhibited to the Section two prints from negatives and said: The negatives were made with an emulsion that was nearly two years old—not quite as old as the paper, but it will be two years old in the Spring. The important fact about it is that it has not deteriorated in sensitiveness. It is just as sensitive as emulsion made only a week since. Of course these facts we can only demonstrate by time. We cannot determine the keeping qualities of emulsion by theory to any extent; but that this emulsion is just as sensitive as it was a year and a half since is to me a very important fact; that we can have an emulsion which will respond at any time to one's wish, and have no fear of it playing any of the old bath tricks, is exceedingly satisfactory.

Mr. CHAPMAN. Was this emulsion you speak of ever in the foggy condition, and had been reclaimed?

The PRESIDENT. I cannot answer that question positively. My impression, however, is, that it was never in a foggy condition.

Mr. CHAPMAN. I found nearly all the emulsion that went over into that condition, or passed beyond its best condition, without chloride being added to it sufficiently to restore it to its normal state, continued to become slower and slower. That has been my experience; but an emulsion prepared just as it should be, not to be restored or brought back, will remain as it is.

Mr. NEWTON. That may be so. I have emulsions two years old that retain their good qualities. I would rather work an emulsion a year old than one made recently.

After some further conversation the proceedings terminated.

Talk in the Studio.

OIL COLOURING.—We are occasionally consulted by correspondents who require the aid of artists for colouring, but generally find it difficult to give advice. We may remark, however, that we have recently seen some examples of colouring in oil on enlargements, which appeared to us to be very excellent and artistic work. The painting was executed by Mr. E. Sawyer, of Newcastle-on-Tyne, who is, we understand, settling in London with a view to executing such work for photographers. We believe the work will be good, and the artist trustworthy.

"THE DRUGGISTS' ADVERTISER."—We are requested by the Editor of this journal, from which we have occasionally made interesting extracts, to say that having undertaken important business duties, the issue of the journal will cease.

A SUPPOSED NEW DEVELOPER.—The Editor of the *Society's Journal* says:—"Mr. J. R. Clarke, of Thirsk, writing to the *PHOTOGRAPHIC NEWS*, communicates a developer for dry plates, which is made as follows:—"To twelve ounces of boiling water, and three ounces of salt of tartar (to this while hot), add oxalic acid until effervescence ceases; if found too acid, add a little more salt of tartar until about neutral; this is a stock solution which will keep. To make the developer, add to each ounce of the above about 20 grains of photosulphate of iron (ferrous sulphate)." Mr. Clarke says that the advantage of this over the ferrous oxalate developer is, that it will keep for a month or more; it develops quicker, and after the iron is added, it will keep in good developing action for three or four days. Salt of tartar is really potassium carbonate, and Mr. Clarke, by adding the oxalic acid, produces the neutral potassium oxalate, so that we have in reality ferrous sulphate added to neutral potassium oxalate to form the developer. A simpler plan is to get the neutral oxalate and add the iron salt directly to it. As a developer it is excellent, and we have frequently used ferrous oxalate by adopting the following plan:—Saturated solutions of potassium oxalate and ferrous sulphate are made, and the latter added to the former in equal proportions; the result is a developer which is not quite so active as that already given in the pages of the *Journal*."

A CONVENIENT PLAN FOR WASHING GELATINE EMULSIONS.

In Mr. Bennett's process a rather inconvenient plan of washing the gelatine emulsion is prescribed, and one on which we think we have improved, since by adopting it the emulsion can be washed in an ordinarily lighted room. A bottle by preference having a wide neck is chosen, and a tin canister with a top is procured, into which the bottle can be placed and covered up. In the top a hole is carefully drilled so as just to fit a piece of $\frac{1}{4}$ -inch glass tubing, $\frac{1}{4}$ inch longer than the canister is high; and about 2 inches from the bottom another hole is bored, and a $\frac{1}{4}$ -inch tin tube with a couple of bends at right angles to one another soldered over the hole. The bottle with the emulsion in it is placed in the canister, the glass tube put into the bottle through the hole in the lid, and a piece of india-rubber tubing slipped over the projecting end of the tube till it fits tightly against the lid. The other end of the india-rubber tubing is fitted to the water supply, and the amount of water admitted to the bottle regulated by a clip on the tube or by the tap. We have ourselves used as a reservoir a 4-gallon jar with a hung-hole at the bottom; into the bung a piece of glass tubing is inserted as an exit for the water, and the supply is controlled by a clip on the india-rubber tubing. It answered excellently: four times filling washed the emulsion perfectly.—*Ibid.*

PHOTOGRAPHY AS A DETECTIVE.—Some correspondence has lately appeared in the *Times* on the failure of photography in thief catching. The following letter in the same journal makes some suggestions on the subject:—"In a letter from Mr. Fenwick, which appeared in the *Times* a few days ago, mention is made of the unsatisfactory results obtained in the photographing of convicts. Allow me to suggest that the camera and accessories used in photography being only receivers and not producers, the whole performance for a likeness occurs in front of the camera—i.e., on the face of the sitter, and by a studied appliance of the light. Therefore, the best means for arriving at a good result should be to photograph the convicts when they show their natural faces. By a very simple contrivance their likenesses could be taken unawares, and then the collection of portraits would be really useful. Another point of equally great importance would be to represent the convict either with a beard added to the portrait or suppressed from it, moustaches or no moustaches, alterations in the shape or colour of the hair, changes in the forehead, &c. This could be realized by a series of small masks, which would allow the police to see at a glance the same face with all possible changes. I refrain from trespassing on your valuable space to enter into a full description of the whole system proposed.—Your obedient servant,
SOL."

A NEW LIGHT GUN.—*Punch* says:—"Gentlemen of the Gun Club, it may perhaps interest you to know that a French Captain, M. Vassel, has proposed, in *La Nature*, an idea, said to have been originally conceived by M. Marey, of a 'photographic gun.' As you may suppose, this invention is so named from being designed 'for fixing birds in their flight.' 'This gun, which is fitted with Bertsch's automatic camera-obscura, is actuated by means of a trigger, but this trigger, instead of the usual action, releases a rectangular sliding screen, which has a round aperture in the centre to let the light pass, whilst it intercepts its two extremities. Should it be desired to produce at one operation a series of successive attitudes, the construction of a 'photographic revolver' would offer no greater difficulty than the gun described.' There, Gentlemen and Sportsmen, is a kind of gun by which you may be enabled to shoot live birds on the wing without hurting them. You bring down their photographs, and not themselves, but of course it must require at least as steady and skilful an aim to photograph them as it does to shoot them, so that the sport is all the same; and as for the fair damsels who countenance your exploits by their charming presence, they would surely derive additional enjoyment from seeing you hit off the pretty pigeons without killing them."

HOW ANOTHER MARTYR PUT IT.—"A little too much repose about the mouth for it to be natural," was the remark of a husband to a West-end photographer who had taken his wife's photograph.—*Family Herald*.

To Correspondents.

HAACKMAN.—We cannot learn that any further experiments were made with junoniate of silver for photography. We think it is probable that if Sir John Herschel had done anything further in the matter we should have heard, as he was in the habit of occasionally corresponding with the *PHOTOGRAPHIC NEWS*. The salt is not, we think, in commerce. You will note that it is spoken of as being as sensitive as bromide of silver, not more so. Exceeding sensitiveness necessarily involves liability to fog. 2. We shall be glad to hear details of your experiments with gelatin-chloride of silver, and to see results. We shall have pleasure in trying it. Upwards of a dozen years ago Mr. Palmer worked in this direction with moderate success; and about the same time a patent was taken in this country for such a process; but it never came into popular use. Whilst engaged in working out our collodio-chloride process we tried gelatine with only partial success, the sample of gelatine we used having been, we think, had, as the film sometimes dissolved in a cold fixing solution. The "sandy" surface to which you refer we have attributed to excess of free nitrate of silver. 3. The heat bromide for emulsions has been a matter of some discussion. It is dependant chiefly upon which is most trustworthy for the precise proportion of bromine it contains. Dr. Eder recommends the double bromide of ammonium and cadmium. 4. You will see that the question of time and heat in regard to the maturity of emulsions was discussed at the last meeting of the Photographic Society. Our own experience is too limited and too much confined to experimental operations to be of authority.

J. R. W.—You are right in your conjecture; it should be oxalate of potash. You will find the method stated more fully in Capt. Abney's little work on emulsions.

SPRING.—You cannot very well combine in one a lens and camera best suited for landscape work and portraiture. A bellows-bodied folding camera is most convenient for field work, and will answer for portraiture; but a portrait lens is best for portraiture, and is certainly not best for views. If you use it well stopped down, it may answer for some subjects. We cannot with propriety recommend makers by name in this column; if you will send a list of those you wish to select from, attaching a figure to each, we can indicate by the figure that we most recommend.

J. N. Z. D.—There is nothing to prevent you from becoming a member of the Photographic Society of Great Britain. The terms of subscription are one guinea admission fee, and one guinea per annum. According to the rules, however, gentlemen residing abroad are exempt from annual subscriptions after the first has been paid; but they are also exempt from the receipt of the Journal and of presentation prints. If you wish, therefore, to receive the journals and presentation prints, you will have to continue subscription of a guinea annually.

VICTORIAN AMATEUR.—The chief defect in the example of portraiture you enclose is the presence of ribbed markings crossing the picture diagonally. This is due to the glutinous character of the collodion, arising either from the use of an unsuitable sample of pyroxyline, or to excess of alcohol, or the use of alcohol containing too much water. 2. There are appliances for aiding in mounting, but we do not know of anything more effective than careful hand mounting. There are trimming knives which facilitate neat trimming of the prints. We do not know the price, but most dealers will supply them. 3. There are several excellent samples of collodion in the market, which you will find mentioned in our advertising pages.

FREDERICK C.—We are very sorry for you. As you will see, we have ordered the insertion of the advertisement.

W. AINSWORTH.—Your letter was forwarded as desired.

HERBERT H. LANE.—We are sorry that no successful issue was reached. We are sorry that we do not know the address in question. Your envelope, open at the ends, was marked by the Post Office authorities as "containing a communication in the nature of a letter," and charged extra letter postage.

REVERSED NEGATIVES.—Referring to this subject, our correspondent, J. L., writes:—"In my communication respecting the date when Mr. Dallas first suggested reversed negatives, I wrote by mistake 1863 instead of 1862. If you will kindly correct the error, you will much oblige, yours truly,
J. L."

FORESTER.—The simplest test of the fitness of water for photographic purposes is to add a few grains of nitrate of silver, and place it in the light. If it contain chlorides or carbonates, a white precipitate will be formed at once. If organic matter, it will discolour in the light.

BROMO.—We do not know anything of the chemical constitution of Judson's dyes, but should not think them safe for repeating the experiments described by Captain Abney. We do not know where the substances named can be obtained certainly, but probably of a manufacturing chemist's house, like that of Hopkin and Williams.

J. C. G.—The process of enamelling cards could not be described in the space we can devote to answering correspondents. Our correspondent cannot have been in the habit of reading his *News* with any attention, as we have described the process in detail repeatedly in past issues. You will find an article on the subject in our *YEAR-BOOK* for 1878.

OPERATOR.—We have recently repeated several times formulae for developing collodion transfer pictures. Take the following, which will answer well:—Pyrogallie acid, 2 grains; citric acid, 1 grain; acetic acid, 30 minims; water, 1 ounce. We fear that you will find it very difficult to use bromide in the developer with such a process. The alkaline pyro is only suitable for bromide plates. We have tried a bromide in the developer in the wet process, but without satisfactory results.

Several correspondents in our next.

PATENTS.

BY F. DES VREUX,

Patent, Trade Marks, and Designs Agent, 32, Southampton Buildings, W.C.

Provisional Protection for six months has been granted to:—

1183. James B. Spurge, Analytical Chymist, and John Whitcher, Photographer, both of South Street, Romford, Essex, for the invention of "Improvements in or applicable to apparatus for covering or exposing the lenses of photographic apparatus."

Notice to proceed has been given by:—

5036. Theodore Pixis, of Munich, in the Kingdom of Bavaria, in respect of the invention of "Improvements in the mode of transferring photographic pictures."

The Photographic News, April 25, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHERS VERSUS PAINTERS IN THE MATTER OF COPYRIGHT—ARTIFICIAL LIGHT—COMMERCIAL DRY PLATES ABROAD—BALLOON AND CAMERA IN NATAL.

Photographers versus Painters in the Matter of Copyright.—The copyright action which was decided at Maidstone last week will go a good way to strengthen the rights of photographers to their own work. We have had several amusing letters—to use a mild expression—in these columns anent copyright in photographs, in which those who have pirated work, when called upon to explain their conduct, have replied with singularly ingenious and artless expressions. One of the last examples was that pointed out by Mr. H. P. Robinson, of Tunbridge Wells, in which case the offender was the editor of a religious journal. We do not know if "On the Look Out," one of the most striking pictures, two or three years ago, at Pall Mall—an old fisherman, looking over a wall, with short pipe and sou'wester—has been reproduced by leave of the photographer, but, if not, we should advise his calling to account the publishers of a coloured almanac that is to be seen everywhere, and upon which the well-known figure-head appears as large as life, or, rather, as large as the original. The Maidstone case is exactly parallel to another one in which Mr. Robinson was also the complainant, and in which, it may be remembered, a painter copied one of Mr. Robinson's photographs, the painter in question naively remarking that he had seen the photograph at the house of a friend, and thought there was no harm in copying it. In the Maidstone case the injured photographer, unlike Mr. Robinson, took the matter into Court for decision, and at once gained his action. A London painter, one Mr. Hills, produced a picture of Old Maidstone Bridge, a picturesque structure spanning the Medway, which doubtless many of our readers remember. There was no reason at all why he should not depict such a fine bit of antiquity. Indeed, old Maidstone Bridge, with the quaint church and ivied walls down by the placid river, the trim College grounds and the green meadow slope that borders the brimming water, together make up a nook that artists have time after time depicted. But Mr. Hills, instead of taking his canvas to the river bank, selecting his sites, and composing his picture on the spot, had recourse to the work of a Maidstone photographer who had done all these preliminaries. His oil painting was, indeed, but the transcript of a photograph: there was plenty of original work, no doubt, in his finished picture, but, unfortunately, it included likewise all the points of the photographer's work as well. There could be no question about this, and the result was, as we say, that the County Court judge pronounced in favour of the plaintiff. The judge ordered Mr. Hills to pay the penalty of a guinea, and to make over his picture to the plaintiff, the picture being valued at thirty guineas. We are glad to see that the photographer's sense of justice was equalled by his generosity, for he declined to accept the painting for himself, suggesting that it should be given to the Maidstone Museum; and this course was in the end adopted.

Artificial Lighting.—The question of photographing by artificial light is attracting attention in Berlin almost as much as in this country; and Herr Duby recently gave a lecture on the subject before the Berlin Photographic Society. One hint should not be lost upon those who are attempting the use of ordinary gas, which, as correspondents in our pages have shown, seems to give most promising results. The hint we refer to reminds those who employ gas how much they can at any time magnify the lighting power by employing in the tube through

which the gas passes some loose cotton wool impregnated with naphtha, benzine, or carburetted liquids. An arrangement, indeed, may be effected whereby the coal gas can be allowed to bubble through a liquid of the kind we have mentioned, and in this way a jet of constant power can be secured of an intense character through the medium of an ordinary burner. The most simple arrangement is to put a piece of flexible tubing upon a gas bracket, then connect a piece of glass tubing in which the wet cotton wool is, or the bubbling apparatus, and then by means of another piece of flexible tubing connect the burner. If the cotton-wool arrangement is made use of, an arrangement is then at hand whereby this is easily replenished, and a change may be effected at every exposure, if need be, without the least difficulty. The improved Sugg burner, something of the character of the brilliant lamps which are to be found just now in Waterloo Place and in Queen Victoria Street, also furnishes a very dazzling light, and this by merely burning the gas in an improved manner, without any aid from a carburetted liquid.

Commercial Dry Plates Abroad.—The matter of commercial dry plates seems to have attracted the attention of the Vienna Photographic Society, and some of the members have expressed regrets that there are no makers of these requisites in South Germany. "In England," said one of the members, "there appeared to be a great traffic in dry plates, probably in consequence of the large number of amateurs who pursue photography as an amusement." We gave the same explanation a short time back in these columns, and cited the large amateur element in this country as one of the reasons why Great Britain has been to the fore in improvements connected with dry plates. But the Viennese are not to be beaten, and so it appears that, since no firm in Austria will prepare sensitive films for sale, supplies are to be drawn from London houses. There is, however, a difficulty in the way in the form of Custom Houses, which desire to search packages before they can be permitted to pass, and unless, therefore, the Custom restrictions can be modified, these supplies will be few and far between. This circumstance, we remember, caused a great deal of anxiety on the part of one of our correspondents some years ago, who desired to pass a packet of dry plates through the Copenhagen Customs. In this case the officers wanted to open the packages, and would not permit the plates to pass without inspection. Fortunately for our friend, they had been put up in parcels of four only, and the officials at last were satisfied that it was but a question of glass plates when the small individual packages were placed before them. Whether the German and Austrian Customs are as strict, we do not know.

Balloon and Camera in Natal.—There seems little doubt that a balloon equipment will be sent out to the Cape for reconnaissance purposes, and a camera will in all probability form part of the aeronaut's equipment. The equipment is to be of such a nature as to be able to provide the gas necessary for inflating the balloon, and this gas is to be hydrogen. A portable furnace will be carried, having tubes in the interior filled with iron. A small boiler provides a supply of steam; this steam is passed through the heated tubes, and the iron in these tubes, becoming rusted by absorbing the oxygen from the steam, the hydrogen is allowed to pass out and fill the balloon. The hydrogen would, under ordinary circumstances, be rather wet, and therefore a desiccating arrangement of some kind will have to be provided. So far, we believe, the army under Lord Chelmsford is unprovided with photographic apparatus, a matter all the more to be deplored, since, if the camera can serve for nothing else, it can provide illustrations for the General's report to the Commander-in-Chief. But if a balloon is sent, a camera will be well-nigh indispensable, for it can see quicker and better than the human eye; and, moreover, make record of what it does see.

GELATINE PLATES IN INDIA.

BY COL. F. DAWSON.

DURING the past twelve months I have experimented upon gelatine plates and pellicle, and thinking my notes may be of use to others, I take the liberty of jotting them down.

It is quite possible to develop plates with the liquids used at the temperature of 85° Fah.

It is quite easy to make your own dry pellicle without setting the jelly or using ice.

To Make Pellicle.

Nelson's gelatine	...	...	250 grains
Brom. potassium	...	...	200 "
Distilled water	...	...	5 ounces

Use pounded and dried bromide, weigh carefully, and dissolve in 4 ounces of the water; now weigh the gelatine, and place in a yellow hock bottle; filter the bromide into the bottle, and wash out the filter with the remaining ounce of water.

Allow the gelatine to soak for two hours, when it should be quite swollen and soft. Now have a large saucepan full of nearly boiling water, dip the bottle into the hot water quickly for a second, continue the dipping until there is no fear of the bottle breaking and it becomes as hot as the water, shake up, and ascertain that the gelatine is quite dissolved.

Melt 280 grains fused nitrate of silver in 2 ounces of distilled water, filter, and wash out the filter with 1 ounce of distilled water. Place this clear solution in a small bottle in the hot water until warm.

Now add the silver solution to the gelatine in small quantities, not exceeding 10 minims at a time, with violent shaking after each addition; when the whole of the silver is added, shake up for five minutes, and place the bottle in the hot water; give occasional shaking at intervals of a quarter of an hour for two hours, then leave the bottle in the hot water for at least four hours longer (occasional shaking is an advantage); at the end of these six hours the water will have cooled to 85° or 90° Fah., about the temperature of the atmosphere.

Now remove the bottle, and into it pour, by an ounce at a time,—

Methylated absolute alcohol	...	6 ounces
Methylated spirit	...	6 "

(The spirits must be free from gum.)

Shake up violently after each addition of the spirits, and continue adding at intervals of a few minutes, until the gelatine begins to precipitate upon the sides of the bottle; when this is observed, add an extra ounce or two, according to available space in the bottle, shake up violently, and leave standing in the dark room for two or more hours. One hour may be found to be sufficient; the appearance of the fluid in the bottle should be your guide.

If, upon pouring a small quantity into a minim measure, it appears thick and very milky, either sufficient time has not elapsed, or your spirits are too weak, or you have not used enough. As a rule, two ounces of the mixed spirits are enough to abstract 1 ounce of water known to be used in the formula.

If the liquid in the minim measure is merely opalescent, you may with confidence pour out the whole of the fluid. If, after the fluid has stood for two hours, the gelatine has not separated, you have made some mistake.

When the pellicle has precipitated, pour off the fluid and drain the bottle; now pour into the bottle 2 ounces distilled water, place in hot water and re-melt the gelatine, pour out as much as possible into a clean glass dish, and remove the surplus adhering to the bottle by additions of 1 ounce distilled water at a time; 2 separate ounces I find quite sufficient. With a glass rod mix the gelatine in the dish, and then with one hand stir up, and with the other slowly pour

in 2 ounces of spirit (same strength as before) for every 1 ounce of water you have used in re-dissolving the pellicle.

Almost immediately the gelatine will stick to the glass rod, and also to the bottom of the dish; continue stirring until the whole of the pellicle is collected in a lump on the glass and a part smeared over the dish, but with the spirit only slightly opalescent; when this is the case throw off the spirit and drain the dish, then pour into the dish an ounce or two absolute alcohol, and knead with your fingers the pulpy mass of gelatine; scrape up all you can from the dish with an ivory knife; after a few minutes you will find the gelatine getting tougher and tougher; pull it into bits and keep it well wetted with spirit; it will not adhere to the fingers. When the pellicle becomes about as tough as a piece of india-rubber of similar size, drain the dish; give the pellicle a squeeze in a clean pocket handkerchief or towel, and proceed to tear it into very small bits; now place the dish containing the bits on a tin dish of hot water or other means of applying heat by water. As time passes inspect your pellicle; you will find the outside gets hard, while the inside remains soft; when this is the case, tear the bits into smaller bits, and continue the drying and tearing until the pellicle is as dry as it is possible to make it. Then place it in a stoppered bottle and keep in the dark.

The fused nitrate of silver is simply crystalized silver brought to melting in a small capsule.

I have used pure spirits with similar results. Crystalized silver may be used without fusing.

For Use.

Dry pellicle	...	...	2 drachms
Distilled water	...	...	3 ounces
Spirits of wine	...	...	1 drachm

Allow the above to soak for a couple of hours in a 6-ounce stoppered bottle, then warm in a mug of hot water; shake up well until the ingredients are thoroughly incorporated, and filter.

The above quantity will coat 18 plates 8 by 5.

To Prepare the Plates.—Obtain a 2-ounce glass filter round the nose tie muslin four thicknesses, and clip.

Next obtain a 4-ounce comelless collodion pourer. Remove the pourer, and into it plug a thin piece of sponge, sufficiently thin to permit the gelatine to flow through it and stop bubbles.

Damp the sponge before use. Filter the gelatine into the collodion bottle, and replace the pourer. Place the filter in the stock bottle, and stand it in a tin pot of hot water. In another tin pot of hot water stand the collodion-pourer containing the gelatine. Have ready some pieces of plate glass carefully levelled on a table and capable of holding 18 plates 8 by 5; also have ready some means of warming the plates—a spirit lamp or a tin water bath. Warm each plate sufficiently, about as warm as you would when varnishing a negative, rather under than over. Now pour the gelatine on to the plate exactly as you would collodion, let it run all over the plate, and then pour off into the filter, while you count three in quick time.

Remove any surplus from the corner or back of the plate by passing the finger over the spot, and at once place the plate down on the levelled plate glass. The plates will take about one hour to prepare, and will be perfectly dry in four hours; some, of course, will be dry before others. The candle may with impunity be nine feet from the place you are preparing the plates. Plates prepared by the above formula are at least as sensitive as wet collodion, and I find no signs of fogging from the candlelight. The colour of the film is a deep ruby. The films should be fairly thick, but not too thick. If, in using the amount here named, you can prepare 18 plates 8 by 5, you may anticipate they are correct. If the plates are much longer in drying than four hours, you may conclude they are too thick, especially if you have not one dozen and a half.

One drachm of alcohol is quite enough for three ounces of

water; more has a tendency (as pointed out to me by Mr. Kennett) to drive the gelatine too much towards the edge of the plate, and I also find that much more than one drachm causes the film to dry in waves of unequal thickness, with a watered-silk like appearance on the surface.

The plates must be *perfectly* dry before placing in plate-box or holder. I have not found backing of the least good in preventing blurring. If the subject is carefully selected, and the films are fairly thick, I do not find any tendency to blurring. If the gelatine is poured on to the glass in sufficient quantity, it will run like collodion. If you do not pour on enough gelatine, the chances are it will not run all over the plate, but have a desire to go its own way; in this case *freely use the finger* to guide it, but be careful not to place the finger on and touching the glass; keep the finger in the gelatine, and on all occasions of using the finger be careful not to remove it from the gelatine until you have brought it to the edge of the plate and towards that side whence you intend to pour off. Bubbles are most difficult to see and remove: be careful to avoid making them.

Holding the plate after coating for any time will result in the gelatine being repelled in the neighbourhood of the fingers.

To Expose and Develop.—I find that success mainly depends on correct exposure. Where there are great contrasts from very bright light, you must give a longer exposure than when the picture is not so brightly lighted, otherwise you will have chalky whites and black shadows. A good negative is a very poor thing to look at in point of density. If it is in appearance approaching the density of even a weak collodion negative it is useless; it should have the appearance of a greenish looking transparency. The time of exposure may be for ordinary landscapes from three to fifteen seconds. I have not myself succeeded with long exposures, except when using Kennett's slow plates; these will stand *many minutes' exposure*, and without a sign of blurring.

Development.—Place the exposed plate in a dish, and dash over its surface two ounces of filtered pyrogallic, 4 grains to 1 ounce of distilled water, into the glass. Measure, pour 2 drams of the following,

Brom. potassium ...	...	...	23 grains
Liq. ammonia fort. ...	...	...	30 mins.
Distilled water ...	...	...	2 ounces

Pour off the pyro on to this mixture in the measure, and as quickly as possible pour on to the plate in the dish. The image starts out at once, and in five to ten seconds the development is complete. The appearance of the negative at this stage is very deceptive: it should *not look fogged*, but with this exception very little idea of what the negative will be is obtained. Have ready your hypo, one ounce dissolved in four ounces common water. Pour off your pyro developer, and at once pour on the hypo, being careful not to pour it *on to the plate*, but pouring freely and flooding it over quickly. Be careful to keep the plate in the dark until perfectly fixed, or there will be stains. It is quite impossible to fix a negative without stains if it be taken to the light before fixing.

The secret of being able to work with all the solutions at upwards of 80° depends upon having everything ready and working quickly. Immediately the negative is perfectly fixed, remove it, and, holding it by the corners, place downwards. Place it in a basin of water as cold as you can procure it, move it very gently for about ten seconds, change the water, again wash for ten seconds, and leave up on a corner to dry.

If care has been used, there will be no frilling or blistering, and the negative will be dry in half an hour or so in the open air—not, of course, in the sun. I have tried using spirits to draw out the water before the plate is reared up to dry. I have not been successful; unless the spirits of wine be very cold (artificially cold), the image seems to be raised in relief by the action of the spirit upon the film.

I have never varnished a negative; it may be necessary in a climate where the air is charged with moisture, but I have no experience with such a climate.

Kennett's pellicle is better in every way than what I make, but when you have not a stock of Kennett, it is as well to know how to manage, however indifferently, without it. With a packet of Kennett's sensitized pellicle, and 340 grains Liverpool dry collodion pellicle, I would go anywhere and undertake to take any description of landscape I have met in India.

In conclusion, I beg to assure you that I do not wish it to be understood that I recommend the above preparations to the detriment of other manufacturers, but simply because I have extended experience with them, and none whatever with any other.

The amount of pellicle resulting from the formula I have given, allowing for waste, &c., should be enough to coat at least six dozen plates 8 by 5.

Secunderabad, 27th March.

ON SOME EXPERIENCES WITH GELATINE EMULSION.

BY HERBERT B. BERKELEY.*

THE rage for gelatine emulsion is certainly on us again. This process is especially interesting at this season of the year, when processes are tried, but not thoroughly tested. Let us hope that *this time* certain mechanical difficulties, hitherto so closely connected with this process, have been got over.

As gelatine emulsion has been "looking up," I also have been looking up gelatine emulsion, at least so far as my note-book has allowed, and it has struck me that some of these notes, if put in a comprehensive form, might prove of interest to the members of this Society.

In my opinion an alcoholic emulsion will probably be found to conduce to good keeping properties, and therefore to mechanical excellence. For this purpose, however, a suitable gelatine must be chosen, as failure is inevitable with certain kinds.

I hand round a plate that was coated with an alcoholic emulsion. It will be seen that the alcohol has repelled the more watery solution of gelatine, due to more rapid evaporation at the edges.

At a former period I advocated the use of free silver nitrate in the preparation of the emulsion; and I believe now, after all that has been written against it, that plates prepared in this way are more easily developed than when soluble bromide in excess is used. Red fog may arise, but not necessarily. There is some difficulty in dissolving gelatine prepared with excess of silver nitrate in water containing any large proportion of alcohol. It was found necessary to make the emulsion with soluble bromide in excess, to wash, and then dissolve in water and alcohol, equal parts. The addition of a trace of silver nitrate now causes a precipitation, sometimes of both gelatine and bromide. If a plate be coated with the emulsion in this state the effect, at best, is as shown by the plate I now pass round. (It has become darkened by exposure to light, but the granular effect may be seen.) The emulsion may be allowed to digest, and, on adding sufficient soluble bromide to convert the silver nitrate, complete emulsification takes place again. This action appears to me very peculiar and interesting. If an emulsion be prepared with free silver nitrate before attempting to dissolve it in dilute alcohol, solution does not take place properly, even though free bromide be afterwards added. This applies, however, to ammonium bromide emulsion; when zinc bromide is used with free nitrate, solution readily takes place, but even plates cannot be obtained with the opaque gelatine. With alcoholic emulsion excess of silver nitrate causes curious vagaries. An emulsion may be prepared with ammonium

* Read before the Photographic Society of Great Britain.

bromide and excess of silver, even when as much as forty grains of opaque gelatine are used to the ounce of methylated spirit and water, equal parts. But when the same emulsion has been washed, and diluted with water to half the former strength, it is not possible to use more than somewhat under a quarter bulk of spirit. It seems as if the gelatine, having once experienced the blessing of pure water would not again take readily to "spirits."

An alcoholic solution of gelatine, in which is ammonium bromide, on cooling, remains semi-opaque; while an alcoholic solution with zinc bromide becomes milk white. The "No. 1" gelatine may differ from the opaque in many respects.

I cannot, in view of what we hear at the present time of the sensitiveness of gelatine plates prepared with excess of soluble bromide, press the use of free silver nitrate. I am, however, confident that greater latitude of exposure is possible with plates prepared by the latter plan. At the same time they do not appear to keep well; of this there have been several instances.

Red fog, when it is met with in plates which were formerly free from it, seems to destroy all sensitiveness; plates which are afflicted with the fog at the time of preparation retain their sensitiveness; the fog in this case does not prevent the development of an image.

Restraining acid is not necessary with either gelatine or gum-arabic emulsion with excess of silver. Cannot fog in collodion emulsion be caused by a combination of silver with an organic substance? Emulsion made with gum-arabic and kept with excess of silver for a week gave cleaner plates and less detail than the same emulsion kept with the excess during eighteen hours only. Can any one crack that "nut" for me?

I find there is a note to the effect that plates which have been kept dry rapidly after development. Again, that plates which have been carefully kept are less subject to blisters than freshly-prepared plates, perhaps through the film becoming more insoluble. There is certainly a change produced by keeping gelatine plates; they become less absorbent.

It has struck me that the "No. 2" gelatine might give a harder film, and one less liable to blister.

On one occasion I had a curious experience. Two gelatine emulsions were prepared with zinc bromide; their composition was alike, except that one contained an alcoholic decoction of pyroxylin. I will dismiss the decoction with the remark that the tones obtained were blacker and more vigorous; perhaps there was a little more detail visible. But what I want to notice is this: both emulsions being prepared with one grain of silver nitrate in excess, and having been kept warm for an hour and a half, were washed, and plates were made from the resulting emulsions. These were very transparent, and proved about one-fourth as sensitive as zinc collodion emulsion. They were, therefore, decidedly slow. The emulsions were allowed to set in the bottles, and then a little ether was poured on the surface of each; in this way they were kept for several days. At the end of this time I was surprised to find that both the emulsions had become more opaque, though it should be noted that they were not kept in the fluid condition. On preparing plates, the sensitiveness was found to be increased fourfold; they were now as sensitive as the zinc collodion—indeed, instead of being slow, they had become rather rapid.

What was the cause of this unusual change? It could not be reproduced, though the effect of ether was tried, and also that of a trace of free silver nitrate (thinking it possible that a trace of nitrate might have escaped detection after washing); but the silver nitrate had exactly the opposite effect, for, after the lapse of several days, it rather diminished the sensitiveness, and gave additional clearness.

In the previous case, to which I have just referred, the ripening of the emulsion appears to have proceeded while the

latter was in the solidified condition. As the emulsion had been washed, the bromide must have entered into another mechanical state, and perhaps reacted with the gelatine; and all this in the absence of any other body.

HOW TO TAKE A NEGATIVE BY ARTIFICIAL LIGHT FOR THREE-HALF PENCE.

BY A. BRITTLEBANK.*

THE subject upon which I am about to say a few words this evening seems to be attracting the attention of many photographers, and will, I have no doubt, prove a new source of income to many of us who persevere in this branch of the art. I allude to the different means which have lately been adopted in order to produce satisfactory portraits without the aid of daylight. Electric light, parabolic reflectors, and Fresnel lenses, pyrotechnic compounds, and other more or less expensive and dangerous appliances seem to be forcing themselves on our notice, and each device has, no doubt, cost its promoters a considerable number of vexatious and troublesome experiments before it has been brought to its present state of efficiency.

I do not wish it to be thought that I have any desire in the present communication to detract anything whatever from the credit and merit due to those gentlemen who have preceded me in this special branch, and who have really made a great stride in science. They have undoubtedly demonstrated the possibility of producing satisfactory portraits without daylight, but each of the systems has its own peculiar drawbacks. The electric light will, no doubt, be able to hold its own against all other sources of illumination; but the costly plant must prove a serious obstacle to a great number of persons. The luxograph, though not so expensive, is not suitable for many purposes to which artificial light might be profitably applied, mainly on account of the cumbersome and unwieldy reflector at present employed, and the trouble of getting rid of the products of combustion without a structural alteration of the room in which it is employed; and this is a serious consideration if the apparatus is only to be used, perhaps, once in the same room.

I consider for this class of work all the apparatus necessary ought to be so portable as to be carried in a cab at an hour's notice, so that it may be no uncommon thing for Mr. Photographer to be requested to attend on the Hon. So-and-So to take twenty or thirty negatives to-morrow night; and I shall endeavour to show how this can be accomplished by anyone without putting himself at all out of the way, with the outlay of a few pounds only in apparatus, and with an expenditure of about twopennyworth of light for each negative taken.

I will first say a few words about the parabolic reflector as at present in use, the form of which is not suitable for the work to be done, and is, moreover, not the most economical shape to illuminate the object to be photographed. A circular reflector will project a circle of light on the background provided it is at right angles to it, and, consequently, all the light which impinges on the background outside of the oblong figure to be cut out of it is wasted, as will be seen in the diagram (*fig. 1*), and really ought to be utilised by only illuminating the actually required portion. This I know cannot be positively done in practice, as it is the natural tendency of light to radiate in all directions; but I think it is sufficiently plain to everyone that we ought to use a reflector of a rectangular form for rectangular or oblong work. This form is, moreover, much simpler in construction, as it is only necessary to bend tin or silvered copper plates to the parabolic curve in one direction in order to form a rectangular reflector whose sides are parabolic.

But if we go a little further into the case by examining what a parabolic curve really is, I think it can be shown that we can do without it altogether. The curve parabola

* Read before the South London Photographic Society.

is, as most of you are doubtless aware, the section of a cone parallel to one of its sides (fig. 2), and is theoretically the

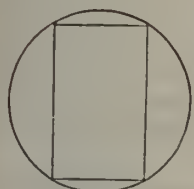


Fig. 1.

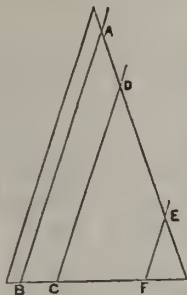


Fig. 2.

most suitable curve for reflecting nearly parallel rays. It is likewise called the curve of equal strength, and is the form used for large girders for building purposes. One of the simplest means of constructing this curve, after having determined its height and breadth, is to draw a rectangular figure, as A B C D (fig. 3), divide the base A B into two

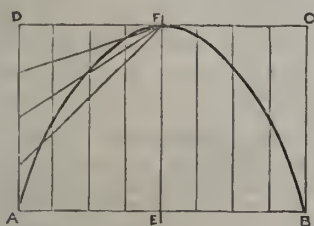


Fig. 3.

equal parts, and erect a perpendicular on the point E F. Divide the line A E into any number of equal parts (say four), and draw lines parallel to E; next divide the line A D also into four equal parts, and draw lines from F to the points at which A D is divided. If we now describe a curve passing through the points where the lines last drawn intersect the perpendiculars, we shall have a parabolic curve. But, as will be seen in diagram (fig. 4), if, instead of cutting

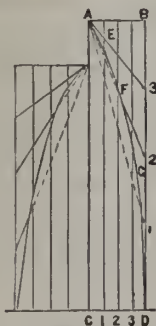


Fig. 4.

the cone near its base, we take a long slice off near its apex, we get a different shaped curve altogether, the lower portion so nearly approaching a straight line that, for all practical purposes, we might as well have straight sides to the reflector, as will be presently shown by actual experiment.

The reflector which I am about to use is made of tin and supported on three legs, which can be detached from it when not in use, and any required angle can be given to it by lengthening or shortening the legs, as in many tripod stands. In front of the reflector is placed a diffuser, which may be made of ground glass, tracing-paper, or other semi-trans-

parent medium, to soften the intensity of the light transmitted through it, in the same manner as the windows of our studios are treated where the direct rays from the sun are likely to fall on the subject to be photographed.

A side screen must be used to reflect light on to the shadow side, and should consist of two light frames covered with calico or white paper, and hinged so that they can be folded together when not in use, and when open be capable of standing without other support.

Lastly, we come to the light itself. This may be readily explained by the rough model which I now exhibit, and which I have purposely left in its primitive state in order to show what kind of results can be obtained by these simple and inexpensive appliances. The lamp consists of about twenty or more small tubes of brass, clamped together between two pieces of wood, and secured in the frame in front of two rollers covered with india-rubber, through which the strands of magnesium ribbon are made to pass. At the back of the rollers is a guide plate to keep the ribbons in proper position; then, by turning the wheel, the ribbon can be advanced as fast as it is consumed, or a certain portion may be wound out and lighted in the gas flame and allowed to burn out. Thus it will be seen that by this extremely simple device we are enabled to get an exact quantity of light, and having once determined the exposure necessary, but little judgment is afterwards required.

The magnesium ribbon burns at the rate of about six inches in twenty seconds, and I find that the combustion of twenty inches is sufficient to produce the negatives which I offer for your inspection with the accompanying prints. They are the first negatives which have ever been taken with the lamp, and the exposures were from five to eight seconds. The present cost of magnesium is 10s. per ounce, which contains about sixty yards, equal to about 2d. per yard; thus the exposure costs (say) three-halfpence for each negative. The very small quantity of smoke generated by combustion need hardly be taken into consideration when only a few negatives are required. Another point which must commend itself to everyone interested is the entire absence of danger, and the cleanliness of magnesium ribbon.

I will now make a few remarks respecting illumination. In the present advanced state of photography, and considering the generally fairly-executed work the public are accustomed to see, it is absolutely necessary for the successful employment of these supplementary appliances that the work produced by their aid should equal that made in daylight. In consequence of the simple and inexpensive nature of my lighting apparatus it is possible to employ two or more lamps for our purpose in order to produce any desired effect of light and shade. Thus, a fifteen or twenty-light lamp may be used to light the principal part of the figure, and a five-light lamp for the shadow side; by this means reflecting screens can be done away with, and the whole of the arrangements may be controlled by one person. To effect this object I propose to wind out the desired length of magnesium ribbon in each lamp, and, having previously connected the gas supply for each lamp to one stopcock, all that remains for the operator to do is to light the gas-burners low, and when ready for exposure, turn the gas on to the full, which will light the magnesium, and at once uncap the lens and make the exposure.

I believe by a modification of this system, and by using a sufficient number of lamps, it is not only possible to take single figures, but groups of persons with the same ease and facility. The brilliancy of the light will not cause any inconvenience to the sitter, provided he does not look directly at the light.

In conclusion: I have to remark that the negatives shown are taken with Messrs. Wratten and Wainwright's dry plates (exposure five and eight seconds), and were developed by Mr. Cobb, who has kindly consented to assist me this evening in conjunction with Mr. Cowan. I have only now to add that anyone is perfectly at liberty to use or improve on the system I have just described.

The Photographic News.

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SHARP DEFINITION IN PORTRAITS.

THE recent press notices of the death of a distinguished lady and enthusiastic photographer recall the memories of a discussion which waxed hot something like a dozen years ago. The bone of contention was whether extreme sharpness, or haziness of outline, was desirable in photographic portraiture. The aim amongst photographers generally was to secure the most perfect definition—the greatest sharpness possible—in their portraits, and in criticizing a photograph they would examine with a powerful lens, and if every single hair could be separated and counted, it was pronounced good; if not, it was wanting. Some of the most artistic and cultivated photographers, however, have always avoided the cutting hardness in question, aiming at softness and modelling, with just sufficient definition to avoid fuzziness. Many had done this with such moderation and judgment that, whilst the charming delicacy and artistic grace were recognized, the want of sharpness did not challenge attention. The exhibition of a large number of the portraits produced by Mrs. Cameron very definitely raised the issue as to whether almost entire disregard of definition was legitimate in photography. The portraits in question were, in many respects, very remarkable ones. They were in many instances likenesses of distinguished persons, and in not a few cases they were produced from grand models. The pictures were, moreover, whatever might be wanting in technical points, generally distinguished by artistic feeling. There was a massive treatment, and a feeling of breadth which was very effective. The effect of light and shade was bold and forcible; and the general effect was distinctly a novelty in photography. Artists who had rebelled against the crisp, hard, sharp, map-like delineations too commonly produced by many photographers, accepted the daringly rough, not to say slovenly, sketchy sun-pictures, so unlike all photographs hitherto produced, as the discovery of a grand possibility in photography. At any rate, it was possible to admire these without any sacrifice of *amour propre*. Photographs with fine definition and detail and true drawing had often been a reproach to the slovenly slap-dash painter, content to get effects, without precision of detail and accuracy of drawing. These new photographs had much of the charm of skilful artists' unfinished sketch from nature—rough, suggestive, and lacking detail, but fresh and effective. Some few distinguished artists and art critics, and many art pretenders, admired these pictures, and affected to find in them a revelation; whilst almost all capable photographers, and many art connoisseurs, including Professor Ruskin, altogether condemned them. The most distinguished art photographers, as typified by Mr. H. P. Robinson, failed to see anything in them which photographers might with advantage follow

—anything which added to the genuinely pictorial quality of photographs—believing that neat manipulation and reasonably precise definition, were not inimical to art truth. Excessive sharpness in unimportant details had been condemned and avoided by the best photographers from the earliest days of the art, and various methods, generally of a mechanical kind, had been devised to secure softness, in place of hard sharp cutting definition. Printing through a medium, moving the focus of the lens during exposure, printing from two similar negatives, and some other plans were proposed and tried; but none came into general practice. The most prevalent means of modifying results was probably the use of lenses made especially to give a more diffused definition in place of cutting sharpness or on plane.

Amongst the most efficient methods of late years, the method of using reproduced negatives with double retouching appears to be well worthy of attention. A transparency from the original negative admits of one kind of retouching. The sharp, black touches required in the finished print are easily put into the transparency. To take an illustration. It is said that Sir Thomas Lawrence, as a rule, left the features generally lacking in sharp definition, a soft and almost fuzzy style of delineation being employed; the eyes and the lines about them were, however, sharp and crisply defined. This gave force and intelligence to the expression, and a look of character to the most common-place face. This effect is easily produced by touching in the transparency. Even if the faces generally appear sadly wanting in definition, the picture will seem sharp enough if the eyes are sharp, which may be effected by a few crisp touches on the transparency. Soft, even fuzzy, definition will generally be tolerated where it removes the effect of scars, poek marks, freckles, and rugose texture of skin; but the lack-lustre eye, which is the consequence of imperfect definition, is generally offensive. For ordinary work, the every-day practice of photography, the skilful worker will get good results by means of ordinary appliances; but where difficult faces have to be dealt with, and especially where a sufficiently large number of prints are required to justify reproduction and multiplication of negatives, the system of double retouching in giving artistic and pleasing qualities to the portrait is one well worth consideration.

A NEW SOLVENT OF PYROXYLINE.

BY H. BADEN PRITCHARD, F.C.S.,

Of the General Photographic Establishment of the War Department.

M. NOBEL, the eminent Swedish engineer, to whom is due the honour of having developed the useful qualities of nitro-glycerine, and applied this valuable blasting agent in the form of dynamite and similar compounds to warlike and industrial purposes, has lately discovered a further quality in the substance. Nitro-glycerine, which is obtained by allowing glycerine to fall drop by drop into strong nitric acid, and thus effecting the nitrification of the glycerine, may be looked upon to all intents and purposes as a liquid gun-cotton, the composition, action, and mode of detonation being similar.

M. Nobel has now brought forward another explosive compound, more violent in its action than gun-cotton or any of the nitro-glycerine preparations hitherto known. He calls it blasting gelatine, but it is gelatine only in appearance, and has none of that material in its composition. The blasting gelatine is, in fact, simply a combination of nitro-glycerine and gun-cotton. M. Nobel does not take the highly explosive cotton—tri-nitro-cellulose—but the less explosive, or collodion pyroxyline, and this he finds is something more soluble in nitro-glycerine than it is in alcohol and ether. Indeed, from seven to ten per cent. of photographer's pyroxyline may be dissolved in nitro-glycerine, the product being, as I have said, a harmonious gelatine mass that is very highly explosive.

I have made some experiments with this new description of collodion, if the name may be given to it. My sample contained seven per cent. of pyroxyline, and this was iodized with the same solution as that employed for Mawson's collodion. The film, when applied to the glass plate, had more the appearance of thick gum-water than collodion, and was not perfectly set—as well prepared blasting gelatine should be—when put into the silver bath. The result was but an image of the faintest kind after prolonged exposure in a strong light, and, moreover, the picture appeared but on the surface, and not in the film itself, as in the case of an ordinary negative. Repeated experiments did not give more hopeful results, and it was very apparent that the new solvent of pyroxyline has little value to the photographer as furnishing a vehicle for silver salts. To those who desire to experiment further with the compound, I would mention that it is of a very poisonous character, and the mere toning of the film, to see if it has set, with the fingers, is likely to bring about a severe headache. This circumstance should be borne in mind by all who have to do with nitro-glycerine preparations.

But if blasting gelatine is unlikely to find employment in photography, it bids fair to elbow itself to the front for military and engineering purposes. Already, as I have said, its action has proved to be more violent than gun-cotton or dynamite, and recently, since Professor Abel's experiments, a further stride seems possible. That chemist has prepared a more novel explosive still by adding to the gelatinous mass a further quantity of gun-cotton, but this time not photographer's pyroxyline, but the highly explosive trinitro-cellulose. The addition of the latter makes the mass into a kind of white dough, which is more easy to handle than the "gelatine," and which has still more destructive properties; so that the last solvent of pyroxyline is likely to play an important rôle in the future.

FRENCH CORRESPONDENCE.

GELATINO-BROMIDE PROCESS—M. BARDY AND THE CHROMOGRAPH—AWARD OF THE PRIZE FOR THE BEST TRAVELLING CAMERA—LECTURE ON THE APPLICATIONS ON PHOTOGRAPHY TO THE INDUSTRIAL ARTS—CONGRESS OF PROVINCIAL LEARNED SOCIETIES AT THE SORBONNE.

The Gelatino-Bromide Process.—As the remarks made at the last meeting of the Photographic Society of France, held on the 4th April, go to prove, the question of the gelatino-bromide process for the production of negatives threatens to be in this country the main point which will occupy the attention of all the true friends of the progress of photography. In England the subject has not so recently come into notice, and the productions of Mr. Kennett have already for some time enabled us to recognize the great part which the process is capable of playing—a process which not only possesses extraordinary rapidity, but by aid of which also we can prepare for any length of time in advance, and in any desired quantity, sensitive films remarkable for their permanence. With us in France, another path was at first struck out; it seemed as if the philosopher's stone of camera printing would be found in the emulsion process—in my own humble opinion a process too delicate, and requiring too complicated a development, to ever realise the desideratum that had been sought for. It is quite otherwise with gelatino-bromide plates, whose extraordinary rapidity and easy development recommend them strongly for use, not only in the studio, but also in all out-door work. This problem—the production of a sensitive film which shall be capable of working in a dry state and with great celerity—has long been studied, and its complete solution is now before us. Here, then, is a new road open to industrial and scientific workers, of such a kind that each one, while pursuing his own speciality, will be able to make use of what we may call the *photographic pencil* for illustrating his ideas, after a very short apprentice-

ship in the manner of using it. The greater the improvements introduced into such work, the more will the applications of photography be promoted. As an illustration of what I would imply, I may point to the art of printing by means of zinc plates, which only became widely extended after a few special establishments had used every exertion to produce photographic wood-cuts. Now the same thing will happen with photographic negatives as soon as we can procure commercially sensitive films ready for use, just as we can purchase cartridges for charging our guns or pistols. For as a time will come—and that a not very distant one—when every one will receive, as part of liberal education, a special instruction in the use of a photographic apparatus, we shall each of us carry about this instrument in our portmanteaus, and no one will travel without bringing away with him photographic recollections of his excursions. These ideas are suggested to me by the high state of perfection to which the gelatino-bromide process has been brought. Up to the present time we have had plenty of different kinds of dry plates to take with us on our travels, but the long exposure required, and the uncertainty of the results, were enough to discourage not only those who used these plates, but still more those who were desirous of working with them, provided the manipulations were easy and the results constant. Very soon, now, manufacturing establishments for the production of plates and pellicles of gelatino-bromide will be opened. Portable apparatus, like that which is so well made in England—much better than with us—will be produced in any quantity, to realise the idea of what I have called the *photographic pencil*. The artist, the scientific man, the tourist, the explorer, will only have to learn for a few hours the management of this pencil, to be able to obtain similar but much more accurate results than he could with the art of drawing. Thanks to the rapidity with which the gelatino-bromide plates receive an impression—a rapidity much in excess of those of wet collodion, although that has hitherto been considered quite sufficient—he will be able to reproduce animated nature instantaneously, and to take from the life a whole crowd of facial expressions, so valuable for reference, without speaking of all the still-life objects which he can copy with surprising facility. Photography will only have had the last word when it shall have left the hands of a few specialists to enter into the daily life of every one; and that day is not far distant now that it has been proved that we can have always at hand sensitive plates produced on a large scale, and that we shall be able to buy them all ready for charging our photographic pistol. There is no need to add that, thanks to the establishments for photographic printing, either by Woodburytype or by phototype, we shall also have all possible facilities for obtaining permanent positives in any number we wish, enlarged or reduced, according to requirements. These considerations appear to me to be not out of place at a time when we are on the point of seeing our most ardent wishes accomplished. It is impossible to think too highly of the results of every kind which the beautiful discovery of which I am speaking produces; at the same time, we must all confess that, as regards the merit of having made this discovery, England occupies the first place. At the meeting of the Photographic Society of France, to which I alluded at the commencement of my letter, M. Stebbing announced that he was able to supply all demands for gelatino-bromide plates; the well-known skill of our learned colleague is a guarantee that his plates will be of the highest excellence.

M. Bardy and the Chromographe.—At the same meeting, M. Bardy submitted specimens of pyroxyline precipitated in water from solutions of different kinds, either in alcohol and ether, or in other substances—methyl alcohol, for example. He also exhibited a little instrument to which he has given the—in my opinion, inconvenient—name of *Chromographe*. As at present arranged, this instrument is in no way connected with photography, but it is

not the less interesting on that account. It consists of a layer of a mixture of glycerine and gelatine, to which is transferred, simply by applying it, a drawing or writing executed on ordinary paper with a special ink formed of a concentrated solution of aniline in water; from this above fifty proofs, facsimiles of the original, can be drawn without the addition of any other colouring matter, and without the necessity for fresh inking. It can easily be conceived that a photographic application may be given to this instrument, and I have no doubt that in a short time we shall note its having obtained some extension of this kind. M. Bary has already indicated a possible use of the layer of gelatine and glycerine for obtaining a photographic image by means of an insensible aniline powder according to Poitevin's dusting-on process. In fact, it is possible to form an image with this aniline powder on a moistened film with a mixture of tartaric acid and iron perchloride, and then to apply this film to the cake of gelatine and glycerine, and in this way to effect the transfer of a photographic image. There can be no doubt of the success of a method of this kind, as far as regards the copying of a picture in lines. I am not so certain as regards the reproduction of an image modelled in continuous tints; but it will be well worth while to study and experiment with the chromographe, to see whether it cannot be made to produce such an effect.

Award of the Prize for the Best Travelling Camera.—Before finishing an account of the meeting of the Photographic Society, I ought to mention that the 500 francs in the competition of travelling cameras has been awarded to M. Jonte. This gentleman is one of our best makers of photographic apparatus, and the decision of the judges of the competition has been received with unanimous approval. Now that the problem has been solved of obtaining rapid and sensitive films, on which I dilated at some length at the beginning of this letter, the question of portable cameras will become more than ever important. What I want to see is a complete apparatus with all the latest improvements, which, however it may be reduced in size, shall take the place, not so much if an instrument or set of tools for a specialist, as of a *valet* *necum* for everybody—in fact, the photographic pencil of which I spoke before.

Lecture on the Applications of Photography to Manufactures.—In order to render complete the account of the photographic events of the past fortnight, I ought to say a few words about my lecture on the applications of photography to the industrial arts which was delivered at the "Central Union of the Fine Arts applied to Manufactures." I have no intention of exciting appreciation of my own labours; indeed, it is not of the work as personal to myself that there is any question, but of the continually increasing importance of the part played by photography in the larger number of scientific and artistic demonstrations. In my last letter, published in the PHOTOGRAPHIC NEWS of the 10th April, I spoke of the very successful lecture delivered by M. Davanne, at the Sorbonne, a strictly scientific centre, whose threshold photography has never before crossed, except in the capacity of a servant. At the "Central Union" our art has already acquired the rights of citizenship; it is now some two years ago that I was invited to deliver there a lecture which was attended with complete success. On the present occasion I can fairly say that the sympathy, and, above all, the sustained attention, with which my lecture was listened to by the audience were such as to prove that the greatest interest was excited by the descriptions and illustrations. It is impossible to recommend too strongly the multiplication of lectures such as these, for they are more than interesting; they instruct without fatiguing, and are able to do very much for the promotion of photography. I have before remarked how few there are among us—even among the learned and enlightened—who possess any accurate idea of photographic processes as a whole. But among my audience on this occasion I had scientific men, members of the Academy, professors of the University,

distinguished artists, and men of the world celebrated for the extent of their knowledge and the depth of their learning. All these were present as at an elementary school to listen to truths of which they previously knew nothing, to admire results whose causes they would never have guessed at. It is for this reason that I try to encourage the organization of similar lectures as often as possible; by making better known both the means at the disposal of the photographic art, and its applications, which are now so numerous, they do much for its promotion, as we have had constant proof after every attempt that has been made in this direction.

Congress of the Provincial Learned Societies at the Sorbonne.—While on this subject I may be allowed to speak of the part played by photography at the Congress of Learned Societies from the provinces, lately held at the Sorbonne. It is true this part was not a very large one, for I was the only one to represent our science by reading a paper; my communication, however, was received with applause by the members of all the scientific sections of the Congress who attended to hear it. The subject of my paper was a means I have recently devised of printing, simultaneously with the text, phototypes inserted in the type in the same way as is done with ordinary typographic negatives. This is an important question, and one calculated to interest highly the scientific world. In my paper, which was listened to with the greatest attention, I explained that for the positive method what we still require is the power of pulling with the text-prints, not of pictures formed by lines—that we can do already—but of photographs modelled in continuous tints. To illustrate this explanation I exhibited the negative of a phototype all ready to be inserted in the type, and I described the simple and economical method of obtaining such negatives. Want of space will not permit me to give in this place a description of this method, which is rather a collective application of several processes already known; I must content myself by pointing out that it rests mainly on the principle of the ordinary process of *phototypie*; that is to say, it consists essentially of an impression on gelatine, and of an image from which a print can be taken, formed by the action of light on bichromated gelatine. But what distinguishes the new process from ordinary *phototypie* is the fact that the two parts of the plate—the surface which gives the print on the one hand, and the hygroscopic layer on the other—are first worked and treated separately, and then bound together, so as to form one block of the required size; this block is afterwards mounted on a support just as an ordinary wood block. In a word, it is the gelatine plate of Edward's process, only treated differently as regards the chemical operations. Thanks to this process, we shall be able to print simultaneously texts and illustrations, and to produce commercially phototypic plates that can be inserted in any composition of type, or can be printed for themselves as separate figures. The whole question requires a more extended notice than can be given to it in this letter for your journal; I must, therefore, reserve any further details for a future occasion. At the Sorbonne the subject was received with great favour, for everybody was able to see how much photography has to gain from this new method of utilizing its services. These services, as we all know, are numerous enough already, but they still claim for themselves—I do not hesitate to say so—a future vaster and more extended than their past, though that even has been so enormously developed.

LEON VIDAL.

Correspondence.

M. BOISSONAS' EXTRA RAPID PROCESS.

DEAR SIR,—One of the many pleasing reminiscences of my visit to Paris last year is that of meeting the late M. Lacan and yourself at the studio of M. Franck. When you

arrived, a portrait of myself was just about to be taken by M. Boissonas' extra rapid process. The exposure was remarkably short, and the negative good, save in the lighting I was quite satisfied, however, that the process was one to be desired. Previous to your arrival, I had spent two hours very profitably in witnessing sitters after sitters (mostly children) posed artistically by M. Franek, and portraits of them taken in less than one second. This I considered exceedingly quick, as the day was somewhat dull, and the lens used was the No. 30 of Dallmeyer. I was freely admitted to the dark room, and was altogether very courteously treated. On my return home I forwarded £20 to M. Klary, and duly received in return the formula; with it I was disappointed, but, having paid so dearly for it, I followed carefully the instructions set down, but with no better result than I had anticipated: the formula was workable, but I gained no increase of sensitiveness over my own method.

By subsequent trials and diligent study of all that had been published upon extra sensitiveness, I was ultimately enabled to obtain portraits with a shorter exposure than I hitherto done; and long before the announcement that M. Boissonas had reason to believe that that incomplete formula had been issued, and that he would send full instructions to all who cared to prove their claim, I had become reconciled to my lot, and had fallen into the even tenour of my way. Imagine, therefore, how this was upset, and how readily I availed myself of M. Boissonas' offer! I submitted to him the formula received from Paris, which he declared to be false, and promised to send me full instructions. This first letter of M. Boissonas favourably impressed me, and convinced me that he was "more sinned against than sinning." In his more recent letter there is barely an allusion to pecuniary matters, but bitter complaints of the injury that his reputation has sustained, which forcibly reminds me of Shakespeare's lines—

"He that flitches from me my good name
Robs me of that which not enriches him,
And makes me poor indeed."

I did not receive the genuine formula until a few weeks ago, the delay being caused by M. Boissonas' desire to make his instructions as clear and complete as possible by having them translated. When I received the manuscript, my feelings, after a careful perusal, were very different from those actuated by the sight of the Paris document. There was about the genuine article conclusive evidence from beginning to end that the writer was a thorough master of his art, and had communicated the very essence of his studies.

No time was lost in putting the process to the test, and the result was more than satisfactory—it was astonishing. The weather at that time was simply abominable, but the process in my hands worked admirably through it all, and since the advent of better weather my exposures have been as rapid as those you saw in Paris. How M. Boissonas intends introducing his wonderful process into this country I know not, nor can I say that he intends so doing; but if so, I sincerely hope for his own sake that he will be his own agent, and that his clients will be as satisfied as myself.

I must not omit to say that the instructions are simple in the extreme, and that since reducing them to practice I have not needed further explanation.

Here it was my purpose to conclude, but I have just received a post card from M. Boissonas in which he declares that he will not (to use his own words) "sell more of the process." I can but infer from this that the annoyance he has already endured has been too severe for him to risk the ordeal again.—Yours truly, P. M. LAWS.

PS.—It is only fair to M. Boissonas and to your readers to add that the formula published some time ago in the journals as that of M. Boissonas is really not the genuine article.

Newcastle-on-Tyne, 21st April.

RAPID DRY PLATES IN THE STUDIO.

DEAR SIR,—Will you allow me a small space to thank Mr. Ferranti for his very frank and gentlemanly reply to my letter on the subject of "Dry Plates in the Studio."

After the very capital articles from his pen which have appeared in late issues of the NEWS, there should be no great difficulty in the way of success to any one who takes up dry plates with a determination to master the details of using them; but this state of mind is absolutely necessary until the new conditions of working become familiar.

There is just one thing which cannot be too often or too strongly impressed on beginners, and that is the fact that the ordinary dark room, as used for the wet process, is utterly useless for the dry. The plates are very sensitive to the yellow rays, and the makers are often abused for sending out foggy plates, when the fault is really due to the "lighting of the dark room." I have excluded all filtered daylight from my dark room, and now use an Argand burner, having the flame covered by a glass of deep ruby colour, because the proper density can be judged only by examination against a light of standard power; and daylight, being so variable, is too deceptive. This is a most important point, for, if the negatives are too thin, they are not easily intensified, nor are they easily reduced if too dense. I think I have now discovered a way to overcome the latter difficulty, and may have more to say on the subject shortly.

I will only add that when an account of my experience can be of service to our "art science," it shall be cheerfully given.—Yours truly, WILLIAM GREEN.

PHOTOGRAPHIC PARADOX, ETC.

DEAR SIR,—Allow me to thank Capt. Abney for the very clear way in which he has answered my question; and you, sir, for asking that men of experience should give their opinion. Although one gentleman only has done so, I think I may say that that request has practically been carried out to the very letter, when that gentleman took the trouble of writing.

Of course you threw out the hint when you used the word "relatively" in the last paragraph of your leader, but I must confess I could not understand why it was that wet plates increased in rapidity so much faster than gelatine as the light grew brighter, nor could I understand it until I came to the table Capt. Abney has favoured us with, giving roughly the number of different coloured rays in the light; but as soon as I saw that the yellow rays were very few in comparison with the blue and violet, I at once saw where the screw is loose; but it is, unfortunately for gelatine plates, too high for mortal man to reach. It was upon this point the latter part of my letter was based. I said, "If both kinds of light, &c." But a glance at Capt. Abney's paper clearly shows that both kinds of light *do not* increase in anything like the same proportion. The extra 90 and 95 of blue and violet rays we get in summer being little or no use for gelatine plates, there only remain roughly about 5 extra of yellow rays. Then if yellow rays are wanted, and we only get, as Capt. Abney shows, about 10 altogether in summer, this fact carries its answer with it. As I understand now, Mr. Cooper's wet plate is only relatively quicker, but the gelatine is always more rapid, that the wet if each kind of plate was tried in the same light—i.e., in a pair tried in a dull light, and a pair in a bright light—the gelatine as you, sir, suggested, in each case would take the lead.

I know that Capt. Abney will not think me impertinent if I state that I did not intend to glaze the studio with yellow glass, else we might almost as well try to photograph in the dark room; but I did not wish it to be understood that I call the light in the dark room an artificial winter light.

The above discussion having brought about the fact that in what is called white light there are so many rays—the blue and violet, for instance—not required for bromo-gela-

tine plates, and so few of the yellow which are, it has occurred to me whether those using artificial light would not do well by trying to produce a light having more of the yellow in its composition, instead of the blue and violet; if it would be practical, it might be quicker, easier to produce, and cheaper. I feel sure that many would be glad if Capt. Abney would kindly give an opinion.—Yours truly,
E. C. MURRAY.

Notes and Queries.

MARINE PHOTOGRAPHS.

SIR,—Can any readers of the PHOTOGRAPHIC NEWS kindly let me know where I may obtain unmounted photographs of shipping of all kinds, especially *shipping in motion*, or with *sails set*? I shall want to know all about the prices, which must be moderate, and the sizes may range from carte up to about 7 by 10 or 8 by 11 inches, but I must necessarily see them before making any purchases. The apparent rarity or difficulty of finding these sort of photographs is my excuse for inquiry.—Yours obediently,
MARINE.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society took place on Thursday, the 10th inst., CHARLES ADIN, Esq., President, in the chair.

The minutes of the last meeting were read and approved.

THE PRESIDENT exhibited several very fair portraits which he had received from Messrs. Alder and Clark—taken by the Luxograph light. The one of himself taken by Messrs. Alder and Clark he did not exhibit, but stated that it was very much distorted.

THE SECRETARY brought the two negatives, and a transparency from one which he exposed at the previous meeting by artificial light. The one exposed to the magnesium light was the best negative in every way.

MR. SCHOFIELD also exhibited two negatives which he had exposed at the same time and under the same conditions as Mr. Chadwick, and with very similar results, for in each case the magnesium exposure was superior.

Some very fine portraits were next shown, the negatives taken by Mr. Wm. Cobb on Wratten and Wainwright's gelatine plates. These photographs were very much admired. It was said by one or two members that collodion and silver baths would not produce such soft and delicate pictures.

MR. Wm. B. WOOD next exhibited a few prints from negatives prepared with collodio-bromide emulsion of his own make, and with which he was able to work very quickly.

At the suggestion of Mr. N. Wright, who said he had seen some very excellent results by Mr. Wood's emulsion,

MR. WOOD promised to read a paper on the subject at the next meeting.

MR. SCHOFIELD exhibited a few negatives, many of which showed an insensitive patch in one corner, which was caused by a gummed ticket being applied after exposure to the back of the plate. These were gelatine negatives of both Kennett's and Bennett's plates, and a Liverpool collodio-emulsion plate also showed the same defect. A collodio-albumen negative which was treated with a ticket and the same conditions did not exhibit any such markings.

MR. JOHN LEIGH said he had had the same thing occur when developing upon a pneumatic plate-holder.

THE PRESIDENT said he had experienced similar defects, but never with collodio-albumen.

MR. SCHOFIELD also exhibited two negatives exposed at the same time to the same subject and under the same conditions: one, a Kennett's plate, exposure twenty seconds, was just rightly timed, and a very fairly printing negative; whilst the other, a Bennett's plate with only three seconds, was considerably over-exposed.

THE SECRETARY exhibited a beautiful little camera, with swing-back, &c., which Messrs. Meagher had just made for him, expressly for taking lantern pictures.

A vote of thanks was passed to those gentlemen who had interested the meeting, and the proceedings terminated.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY

At the ordinary meeting of the 21st Feb. a double dark slide and a lantern for the dark room were exhibited, the invention of Herr SELIGMANN. The former is constructed to carry two dry plates, placed back to back, and can be adapted to admit plates of any desired size; the latter is intended for use in the dark room when working with very sensitive dry plates, and is provided with panes of the deepest red glass, which permits only a minimum of actinic light to pass.

Herr PRUMM showed two portraits of himself, taken on gelatine dry plates of Wratten and Wainwright, with an exposure of less than a twentieth part of the time required for a wet plate. One of these had been developed with iron oxalate, the other with pyrogallic acid. For developing dry plates the speaker greatly preferred the first of these methods, because with the oxalate the development could be accomplished in about the same time as that of wet plates, while with the acid it often took from fifteen to twenty minutes. A drawback, however, in the use of the iron oxalate is that that substance soon decomposes, and has to be made fresh as required. The speaker, while confessing that the photographs exhibited left much to be desired—more especially in brilliancy, in which respect they were far from equalling those obtained by the wet method—pressed upon the Society the need for cultivating to a greater extent the dry processes, which had certainly a promising future. They were coming more and more into vogue in England, and there was no reason why the same should not take place in Germany.

Herr SELLE submitted to the meeting two portrait negatives, and a print from one of them, obtained by Herr von SCHLICHT with gelatine emulsion prepared by himself. As these were not taken in the atelier they could not be judged as regards illumination, and for the same reason the alleged duration of exposure, from three to four seconds, gave no means of forming an idea of their sensitiveness. But in respect of the excellence of the results only a favourable opinion could be formed; both plates and prints possessed fully the qualities of photographs taken by the ordinary wet process.

Herr FAHLING informed the meeting that he had also experimented with dry plates and gelatine emulsion of his own manufacture. In coating the plates he had found some difficulty in making the gelatine flow evenly, and inquired whether it was necessary to previously warm the plate. He also wished to know whether dry plates should be intensified before or after fixing.

In replying, Herr PRUMM remarked that the plates could be intensified as well before as after fixing; sometimes one method was better, sometimes the other, and experience alone was the guide as to which method was preferable. As regards coating the plate, he considered it highly desirable that it should have a temperature of about 72° F.: when the temperature of the room was not up to that mark, it would be necessary to warm the plate. To assist the gelatine emulsion in spreading equally over the plate, a perfectly clean glass rod might be used. Formerly, when it was the practice to sensitise dry plates in the bath, and a substratum of albumen was required, this substance was generally distributed over the plate by similar means, though sometimes centrifugal force was brought into play. For the latter purpose a circular wooden frame is hung up by four strings, something like the scale of a common balance, so as to have a perfectly horizontal position. The four strings are knotted together at the top, and suspended from the ceiling by a single string. By turning the frame this upper string is twisted as far as possible; the plate is then laid on the frame, and the latter let go, upon which the string will unwind itself, and communicate a quiet revolving motion to the frame. By the centrifugal action thus obtained, the albumen is distributed very evenly over the glass. The speaker expressed an opinion that an arrangement of this kind would also answer well for gelatine emulsion. Herr Reichard recommended that the glass plates should be exposed to the vapour of hot water, by which means they would be simultaneously rendered warm and moist. He believed that by this means even a tolerably thick emulsion could be flowed equally over the plate.

Herr SCHAARWACHTER complained that he had always found the plates of Wratten and Wainwright to be under-exposed after an exposure which, as he confessed, was much less than that required for wet plates.

Herr PRUMM believed this defect to be due partially to the developing. He had found it better to use more potassium

bromide than is recommended by Wainwright. He also remarked that it was an error to suppose that plates with thick films were always more sensitive than those with thin films; he had often found quite the opposite.

Professor VOGEL exhibited a drying box for gelatine emulsion plates, in which a draught is created by means of a lamp and chimney, and the air is admitted through a zig-zag tube to pass over the plate in a horizontal position.

Herr PRUMM proposed that the door of the box should be provided with an opening covered with red glass, so that the process of drying could be observed without opening the door, which was liable to give rise to marks in the gelatine during drying; but

Dr. VOGEL maintained that he had never observed such marks, notwithstanding his often having opened the door.

Herr FAHLING feared that dust might penetrate into the box through the air-way, a danger which, as Herr Prumm observed, might be guarded against by loosely stopping the tube with dry cotton wool.

A camera by Herr GRUNDNER was exhibited with a pneumatic shutter placed in the interior of the instrument behind the objective. The arrangement had been patented, is cheaper than the Cadett shutter, and possessed the advantage of not attracting too attention of or frightening the sitters.

Several samples of a new substance for backgrounds were shown by Herr BERGMANN. The same is like flock wall-paper, and is made by causing woollen dust of various colours to adhere to paper by means of some adhesive substance. It promises to serve admirably for backgrounds.

Dr. VOGEL showed a photograph of the spectra of oxygen and hydrogen taken on a gelatine emulsion plate. In the latter the lines up to the extreme red were plainly visible, a proof that the sensitiveness of the gelatine emulsion extends over the whole spectrum. Several lines are seen with ease in the photograph which are either quite invisible to the eye, or can only, be faintly recognized.

At the next meeting of the Association, held on the 7th March Professor VOGEL in the chair, a letter was read from Munich announcing the formation in that city of a new photographic society, of which the well-known photographic artist Herr ALBERT has been appointed President.

A letter was also read from Herr E. BRANDT, of the firm of Brandt and Wilde, Berlin, complaining of the difficulty he experienced in working with albumenized paper in consequence of its tendency to throw up bells and pock marks, and of the liability of the albumen film to strip off from the plate. Formerly this defect was not observed, and the correspondent inquired whether it was not due to the dilution of the positive silver bath which was now universally adopted. When albumenized paper was first introduced, the formula for the bath was 1.5, in which state of concentration it was to be maintained; but now it was the common practice of manufacturers and dealers to recommend the use of only 1.20 bath for their paper. This was probably done in order to attract purchasers, who would be induced to buy the paper for the sake of the economy effected in the consumption of silver. But, as Herr Brandt observed, when the loss in time, material, paper, and even silver (in spoiled sheets) is taken into consideration, it will be seen that a more lavish employment of silver at the outset will bring ample compensation, more especially as the cuttings will fetch a higher price, and the pictures themselves be more valuable.

In the discussion which ensued on this subject Herr RULOFF expressed an opinion that the strength of the silver bath had no real influence in the production of bells. He himself had suffered much less from this annoyance than he did now, though he uniformly had used a bath of 1.10. Several other members doubted whether it had ever been the practice, except for experimental purposes, to work with a bath of 1.5, as stated by Herr Brandt.

Herr QUIDDE, however, from the experience of his own business, in which he had been engaged for over twenty years, was able to confirm the assertion that before the year 1860 a bath of 1.5 had always been used, and up to 1865 he had himself worked with one of 1.6. But this method of working was certainly more costly than the writer of the letter had stated. Between the years 1850 and 1860, when the modern practice of drawing the albumenized paper over a glass rod after silvering had not yet come into use, it was not uncommon to use up from three to four grammes of silver nitrate to every sheet of

paper, while the recovery of metal from the waste, which ought to have been considerable, was, owing to want of the necessary knowledge and skill at that time, very much smaller comparatively than it is now. At a later date, Professor Vogel, in order to fix the actual amount of silver to be used, had, as an experiment, silvered one hundred sheets of paper in a bath of 1.8, and after an accurate analysis had found that the quantity of nitrate used up amounted to at least two grammes per sheet; at the present day, with the customary weak baths, only from 1½ to 1½ grammes per sheet is used.

Herr PRUMM also stated that during the years 1866 and 1867 he had always recommended a bath of 1.6. At that time, some dealer or other, by way of advertising his business, had given out in his prospectus that the paper which he supplied required a bath of only 1.8; then other dealers naturally endeavoured to outbid both him and each other, until a well-known firm came down to a bath of 1.20. In consequence, photographers worked now with much weaker baths than was formerly the case, and this was probably the cause of numerous defects. A bath of 1.12 the speaker held to be decidedly too weak. By a weak bath the albumen is dissolved, by a strong one it is coagulated; even a bath of 1.9 dissolved some of the albumen. As regards, however, the formation of bubbles or bells, and the separation—that is to say, dissolving—of the albumen film, he drew attention to the fact that these two defects were due to quite different causes, and were in no way dependent on each other. The cause of the last-named fault had been sought in the low temperature of the bath; but, in the speaker's opinion, it was owing to the albumenized paper itself, and more especially to the original plain paper; for only one kind of paper was used, and that came all from the same manufactory. His own belief, after much experience, was, that the best means of avoiding the dissolving off of the albumen film was to employ a now silver bath of about 1.7—in any case, not less than 1.9—and if the defect was still found to prevail, to leave the paper longer in the bath, and to avoid the use of a glass rod for draining off.

Dr. FRIEDLANDER exhibited a series of instantaneous photographs of a horse on the trot, taken by Mr. Muybridge at San Francisco. These pictures depict the horse, the driver, and carriage merely as shadows on a light background; the outlines are much blurred, probably because accurate focussing for every position was an utter impossibility. Very remarkable is the varying position of the horse's legs in the different successive photographs.

Several positives for enlarging from were sent for exhibition by Herr WILDE, of Görlitz. These positives were perfectly transparent, even in the deepest parts, and showed no signs of graining. They are taken on dry plates by exposure in a copying frame under a negative. Herr Wilde also prepares them on emulsion paper, afterwards drawing off the film and transferring it to glass.

A camera shutter, capable of being moved from a distance, was shown by Herren MARTINI and BERGMANN. It consists of a simple trap fixed in front of the objective, and is raised and lowered by pulling a string. An objection was raised that in working the shutter the camera was liable to be shaken, but Herr Martini replied that there would be nothing to fear in this respect if the instrument rested firmly in its stand.

Herr SCHAARWACHTER showed a number of examples of a process by Messrs. Werner and Schumann in which a water mark is produced in paper by a photo-mechanical method. From the original a copy in relief on chromo-gelatine is obtained by photography; from this a metal stereotype plate is taken, and the water mark pressed into the paper by means of a hydraulic press. This press must work very smoothly, or the mark will be unequal. The specimens exhibited were very accurate and clear; letters in large or small type, written characters, drawings, even portraits from cartes-de-visite, with all the half-tones visible, were impressed in the paper.

Herr RULOFF showed some examples of plates worked by Herr Boll's electric process; among them were a couple of portraits of the same person, each exposed for ten seconds, the one with, the other without, the employment of electricity. That which had been worked by the electrical process showed a much greater degree of penetration than the other one, though the general effect was by no means so brilliant as had been represented by Herr Boll. Herr Ruloft remarked that the electrical current employed was a very weak one; with a stronger current he hoped to obtain a better effect.

Talk in the Studio.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The next meeting of this Society will take place at the House of the Society of Arts, Adelphi, on Thursday next, May 1st, at 8 p.m., when papers will be read by Mr. E. Foxlee on "The Continuing Action of Light in Carbon Printing," and Mr. Harrison on "Reflectors."

THE ABSORPTION OF THE ULTRA-VIOLET RAYS OF THE SPECTRUM BY ORGANIC SUBSTANCES.—An investigation has recently been carried out by Messrs. Hartley and Huntington on the connection between chemical constitution and diacritical quality. For this purpose they used the apparatus formerly employed by the late Dr. W. A. Miller, with a few slight alterations. The apparatus consisted of a spectroscopic apparatus attached to a photographic camera, the prism and lenses being of quartz. The electric light consisted of sparks of great intensity passed between metallic electrodes. To produce the sparks an induction coil, capable of giving a 7-inch spark in air, was excited by five cells of Groves' battery. A Leyden jar was interposed between the coil and the electrodes, each surface of the foil measuring seventy-two square inches. The electrodes found to answer best were points of nickel wire, containing a trace of copper. Cells of glass, with quartz sides, were used for holding liquids under examination. In order to measure the degree of absorption exercised by different substances, the example of M. Soret was followed, and the lines of cadmium were taken for the purpose. M. Mascart has measured the wave-length of these lines both for the visible and ultra-violet rays. Dr. Miller failed to trace any connection between the chemical complexity of a substance and its actinic absorption, but Messrs. Hartley and Huntington found that:—(1). The normal alcohols of the series $C_n H_{2n+1}$ are remarkable for transparency to the ultra-violet rays of the spectrum, pure methylic alcohol being as nearly so as water. (2). The normal fatty acids exhibit a greater absorption of the more refrangible rays of the ultra-violet spectrum than the normal alcohols containing the same number of carbon-atoms. (3). There is an increased absorption of the more refrangible rays corresponding to each increment of HC_2 in the molecule of the alcohols and acids. (4). Like the alcohols and acids, the ethereal salts derived from them are highly transparent to the ultra-violet rays, and do not exhibit absorption-bands. With the idea of ascertaining whether isomeric bodies exhibited similar or identical absorption spectra, a series of benzene derivatives was examined: one of the most interesting results obtained from these benzene series is that the photographic absorption spectra can be employed as a means of identifying organic substances, and as a most delicate test of their purity.—*Photographic Journal*.

COPYING DRAWINGS.—There has been furnished a brief account of the handy process used at the School of Mines (Columbia College) for copying mechanical drawings and plans by a sort of photography. The original drawing must be on tracing or transparent paper. No camera is required. The process simply consists in laying sensitized paper with the prepared side uppermost on a board covered with two or three thicknesses of flannel, spreading the tracing that is to be copied on prepared paper; covering the whole with a sheet of glass about three-eighths of an inch thick, and exposing the arrangement to sunlight for six to ten, or diffused daylight from sixty to ninety minutes. The copy is then to be washed in clean water thoroughly and hung up to dry. P. Barnes related these particulars recently before the American Institute of Mining Engineers, and specified also the method of preparing the sensitized paper. One solution is made of $1\frac{1}{4}$ ounces citrate of iron and ammonia in 8 ounces of water; another of $1\frac{1}{4}$ ounces red prussiate of potash in a like quantity of water. The water must be pure. These solutions are to be mixed and kept in the dark or in a yellow bottle. The mixture is to be applied to paper on one side only, with a sponge, most conveniently by twice passing the sponge over, first quite wet, and secondly squeezed nearly dry. The paper is then hung by a corner to dry, and must then and afterwards be kept in the dark till used. It should be of a full yellow-bronze colour when prepared. It will be noticed that this method differs from one that has been previously described, in the circumstance that a mixture of the solutions is used, instead of two separate dippings of the paper, but the probability that the mixture could be so used was then foreshadowed. The whole process is new, and has lately become popular from its convenience.

To Correspondents.

AN OLD BUT IGNORANT PHOTOGRAPHER.—Add a strong solution of protosulphate of iron to the gold solution. This will precipitate the gold as a black powder. Wash this precipitate with dilute sulphuric acid to remove traces of iron, then rinse well, and redissolve with nitro-hydrochloric acid, and so make chloride of gold in the usual way.

R. G.—It is altogether a matter of taste. The tone is black, sometimes a greyish or a blue-black. Those who like such a tone will admire them. Those who prefer a warm tone will prefer a gold-toned print. You should see examples before investing.

A CONSTANT SUBSCRIBER.—The spots on the print you forward may be due to various causes. They resemble very much the spots produced by particles of bronze powder, often used in the "gold" printing on the back of the mount. As your print is removed from the mount we cannot tell whether any "gold" printing was present. The spots, however, suggest such an origin. Sometimes they are from other causes. Albumenized paper which has been long kept in a damp place will develop a mixture fungus which causes similar spots.

R. J. S.—The firm in question no longer exists, nor does the tent. It has been superseded by much superior appliances. It answered the purpose moderately well, and was cheap and simple; but many of the dark tents which have been described in our pages, and also those in commerce, are much more efficient.

AMATEUR.—It is wise to master the wet process first, and then learn a dry process.

ZULU.—An ordinary dark slide, such as is used in the wet process, will answer for gelatine plates, provided it is light-tight. Lack of density in such cases may be due to various causes. Over-exposure is a very common cause; the presence of too much light in the dark room is another cause. A stronger solution of pyrogallie acid will help you. The plate must be very thoroughly washed before applying pyro and silver; and it is wise to apply the acid pyro solution without silver first, not adding the silver until the pyro solution flows evenly.

J. L. R.—Precipitate with a solution of sulphate of iron, leaving the lead salt in solution.

FOCUS, JUNR.—The case of the opals appears at first sight very perplexing; but there is, we think, a very definite solution to the problem. There is a fact to be remembered at the outset, which is very often quite overlooked; that is, that the lens is a window through which light passes, as well as an object-glass. When working with full aperture or a large aperture, the light so admitted is apt to produce something foggy, over-exposure; and this is, we think, the case in the instance you describe. If you carefully exclude extraneous light by shielding the lens, you will, we think, get rid of the trouble.

B. D.—Prints should always be well rinsed after toning before immersing in the hypo fixing bath. Any trace of acid in the hypo solution will cause decomposition, and induce sulphur-toning, which will finally issue in fading and the print turning yellow.

X. Y. Z.—The only method we can suggest for obtaining a situation as "improver" is to advertise. There is no special system or scale of terms upon which such matters are settled. In some establishments you will have to pay a premium, and in some you may obtain some remuneration for your assistance.

JUNIOR.—Toning opal pictures and collodion prints for transfer, besides giving a deeper, blacker colour, materially improves the picture by giving it clearness and brilliancy, removing a smoky effect which often characterizes the developed image when examined by transmitted light.

F. S. B.—So far as we know, it is customary to varnish collodion images on opal before colouring them in water colours. It is not a branch of the art in which we have had much experience, nor has much been published on the subject. Matt varnishes are used in most cases. In some cases we believe that a protective varnish is first applied, and then a matt varnish for effect and to make the process of colouring more easy.

F. C.—We wish you success. Do not worry about the obligation. It will wait.

PATENTS, TRADE-MARKS, &c.—We have made arrangements to answer through our columns any questions which may be addressed to us respecting patenting inventions and the registration of trade-marks and designs. As these subjects are of growing interest and importance, we invite all our readers in doubt on any point to write to us. It is almost needless to say we make no charge.

Several correspondents in our next.

The Photographic News, May 2, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AS AN AID TO ANTHROPOLOGICAL SCIENCE—

THE IDENTITY OF PHOTOGRAPHIC WORK—POIKILOGRAPHY

Photography as an Aid to Anthropological Science.—The

employment of photography in the study of anthropological sciences has already led to some valuable results. But a short time ago we referred to a German publication containing many hundreds of photographs showing races and types of mankind throughout the globe. By the aid of photographic portraits in sufficient number of the many distinct types of human beings it was possible to classify the races in a far more intelligent manner than had hitherto been attempted. The work published in Hamburg, if we remember rightly, was necessarily very expensive, and embraced rather too wide a range to be included even within the space of several volumes, and since then the subject has been taken upon many sides, the various students occupying themselves only with certain sections of the human race. In Great Britain an endeavour is being made by the Anthropological Society to collect photographs of types, and it is not so long ago that we conveyed in these columns the invitation given by that Society to photographers, both amateur and professional, throughout the country to aid in the work by forwarding portraits of any strongly-marked families which have been known to reside for some time in certain districts. Dr. Darwin, as our readers know very well, has frequently made use of the camera in illustrating his works, and he was fortunate enough to obtain the co-operation of the late Mr. O. G. Rejlander in carrying out some of his ideas. Some studies illustrative of "expression" were among the happiest results of Mr. Rejlander, and most people have seen woodcuts of these, signifying horror, fear, disdain, &c. These studies have been copied into Continental journals, and scattered broadcast throughout the world, the model in several instances being no other than Mr. Rejlander himself, who threw himself into Dr. Darwin's work, and carried out that gentleman's ideas in an eminently satisfactory manner. Recently a very extensive collection of photographic portraits have been presented to the Anthropological Institute by Dr. Hayden, whose studies relate especially to the Indian tribes of North America. In Dr. Hayden's collection are represented no less than seventy distinct tribes of Indians, so that a most interesting study may be made of these fast disappearing races. It is of course the faces that form the main point of interest in these photographs, but the pictures show in many cases the native dresses of the people. In some instances there is still every appearance of savagery in the personal adornment, in others we see nothing but civilised garments. Some of the men are shown with their native implements of warfare, with scalping knife, and tomahawks, and scalps as well while others, by way of contrast, are shown in the photographs depicted in the coat-tails of the homely citizen. This collection of Dr. Hayden's has recently given rise to an animated discussion, it seems, owing to the supposed resemblance of one out of the number of portraits to that of Mr. Ruskin. It is that of an Ojibbeway Chief rejoicing in the picturesque name of "Hole in the Wall," and so like is his portrait to that of the distinguished art critic, that some aver the picture is one that Mr. Ruskin must have sat for. Whether busybodies or practical jokers have withdrawn the original "Hole in the Wall" and substituted a picture of Professor Ruskin, or whether the portrait in question, though resembling the latter personage, is really that of an Ojibbeway, is still a moot point, and one that is yet exciting interest.

The Identity of Photographic Work.—The *Athenæum*, in discussing the question of genuineness in this case, thinks it hardly likely that Prof. Hayden has been imposed upon by some American wag, and a *carte* of Mr. Ruskin been foisted on this collection; and that journal further suggests

that the matter could easily be set at rest by examining the name of the photographer on the back of the portrait, and if it proves to belong to the Survey, then there will be an end to the suspicions as to its genuineness. We should hardly like to pronounce an opinion upon such evidence alone. It by no means follows that because the mount to which a photograph is attached bears a name, that the latter is the photographer who secured the picture. In the event of any roguery having been practised upon Dr. Hayden, we may pretty well be sure that he who perpetrated it took good care to secure first of all a mount of the same nature as those upon which the genuine pictures are mounted. Deceptions of this kind, we are sorry to say, are not confined to practical jokers. In conversation with Mr. William England one day, we asked him if he were acquainted with that part of the Tyrol known as the Glockner district, in which the Gross Glectner mountain and the Pasterzen Glacier formed the centre. Strange to say, he had not visited that part of the country, although, as our readers know, there is scarcely any Alpine valley or range which Mr. England has not only seen, but depicted in the camera. What was our surprise, then, but a few weeks afterwards, when looking over a collection of Swiss and Tyrol scenes, to see a large picture of the white monarch of the Tyrol, and the famous Pasterzen Glacier, with Mr. England's name under it as the photographer. Mr. England, singularly enough, happened to be at hand at the moment—he was a guest at the house where we ourselves were a visitor—and straightway the pictures were carried to him. Naturally enough, the first idea was that Mr. England, being a considerable traveller, might have forgotten the circumstance of his visit to the Gross Glockner. But no, the explanation simply was that the photographs were the work of another, who had affixed Mr. England's name to the mount; or, what was more likely, a supply of the English photographer's cards had been scoured for the purpose of mounting the photographs. Another instance came under our notice last year. Paris photographic portraits have a high reputation, especially among visitors to the French capital, and some American photographers who were paying a visit to the Exhibition took the opportunity of examining the cartes and cabinets exposed for sale in the French metropolis. What was their surprise to see portraits that were well known to be the production of American firms, mounted upon cards with French names. The shopkeepers knew that the Americans and English were among their best customers, and it was not likely that either of these nationalities would readily purchase their own ware. So a little bit of deception had been practised, which no doubt proved profitable in the end. Therefore we would warn those who are not conversant with such matters to give heed how they take the name printed at the back of a photographic mount as proof positive of the picture itself having been produced by the firm indicated.

Poikilography.—Poikilography is not a pretty name, however charming the pictures may be produced by it; and if it is true, as *Autotype Notes* says, that a National Fine Art Company is now engaged in exploiting the process, we urge the company in question to change the name. Bearing in mind the school-boy legend "Porkusset nicehus," we may assume that Poikilographs are nice also; but since we have the assurance of Shakespeare that a rose by any other name will smell as sweet, there can be no reason for abandoning a term which is rather more suggestive of sausages or peas-pudding than anything of an art character. The process is described as the art of placing a photograph on one side of a cloth or canvas, and painting by hand the other—no reason, surely, why it should be called Poikilography.

SOME CRITICAL REMARKS ON EMULSIONS.

BY M. QUEVAL.*

THE emulsion process, though now scarcely beyond the stage of infancy, is destined, as I believe, one day to replace

all other wet and dry processes. Many formulæ have been published for the production of a good emulsion, but they are all tedious and difficult in practice, and I recommend sincerely not only amateurs, but also professional photographers, to obtain their emulsion, as they have for a long time done with pyroxyline and the other articles they use, by buying it. Last summer I took some six or seven hundred negatives with emulsions purchased at the establishment of Puech, and by so doing I have saved myself from much discomfort and loss of time.

The results obtained by this process resemble in many respects those of wet collodion, only they are often superior to the latter. Though, however, the emulsion process offers many advantages, it cannot be denied that while seeming to be very simple and easy, it presents as many difficulties as the other dry processes. These difficulties I propose now to enumerate, at the same time pointing out the means for overcoming them. However well prepared emulsions may be, though produced by the same manufacturer and with the same formula, it is seldom that any two will give the same results; it is consequently advisable to test each bottle in order to determine its qualities and its defects.

The sensitiveness of emulsions may vary in degree in the proportion of from one to four—that is to say, we may have them acting very rapidly, normally, slowly, or very slowly. In the first case, they are of great value for taking badly-illuminated objects; but photographs taken in them are subject to the phenomenon of irradiation, which renders their employment very difficult for certain views—such as the interiors of buildings lighted by glass windows. In the second case, the irradiation diminishes with the sensitiveness, and can be altogether prevented by using the substratum mentioned below; the development also is facilitated. In the third case—that is, when the sensitiveness is much less—an exposure is required about three or four times as long as that with wet collodion, but then there is scarcely any irradiation, at least not in the outlines of objects that cut the sky. Development is much slower, but much cleaner and more certain, and the results generally are finer. Lastly, when the plates are known to be very slow, we shall obtain the finest results, provided always that we can ensure a sufficiently long exposure. In such very slow plates I have never observed any irradiation, even in views of interiors, and it is consequently not necessary to colour or blacken them. There is no cause to be afraid of the length of exposure up to seven or eight times that required for wet collodion, the plates are easily developed, and are as intense as can be desired.

As a general rule, we may reject every emulsion which requires to be intensified with silver; an emulsion that is properly prepared ought to develop perfectly without intensification. To the absence of metallic deposit is due the great delicacy and transparency of the negatives obtained by this process. There is another reason why intensification must not be resorted to, and that is the extraordinary delicacy of the bromide film. If it be impossible to dispense with intensification before fixing, the negative must be thoroughly washed with acidulated water, to remove any trace of ammonia. It is seldom that the alkaline developer has not penetrated beneath the collodion by some invisible hole, and as a defective place of this kind can never be properly washed out, the silver solution will in its turn effect an entrance, and be the cause often of numerous spots, which it is impossible to foresee or to get rid of. When the plate is intensified after fixing, the manipulation is easier, as it can be carried on by daylight; but it often happens that the hyposulphite introduced at the above mentioned holes can be completely eliminated by washing, and the silver penetrating again in the same way will produce spots which, though different from those before mentioned, will equally spoil the negative. It is therefore very important to choose an emulsion which shall not be subject to these defects.

One of the most frequent causes of failure in working with emulsions is the insufficient adherence of the film to the plate; it is almost impossible to develop without accident a plate on which the emulsion has merely been flowed. There are different methods of giving the film the requisite firmness to resist all the operations it has to undergo.

(1). After having cleaned the plate, rub it with a cotton cloth or a piece of swanskin in which you have placed some powdered talc; this removes the powder by rubbing it lightly with another cotton or linen cloth, taking care not to rub off the greasy smoothness produced by the talc. You will thus have a plate easy to develop, and a film not liable to be removed. I recommend this method more especially to amateurs, but only to those who do not print many copies from the same negative, for the negatives obtained in this way, however well they may be varnished, succumb after being copied a few times.

(2). I have tried, but unsuccessfully, substrata of gelatine and albumen, but a half or one per cent. solution of very pure caoutchouc in rectified benzine has given me almost satisfactory results. I say almost satisfactory, because it is necessary to filter the solution very carefully, and when this effected through ordinary filtering paper its pores soon get stopped, and the filtration is arrested. It also occasionally happens that the benzine, though it does not completely dissolve the paper, will slightly disintegrate it, and will carry away some of the particles which destroy the purity of the film produced on the glass plate. Perhaps this defect may be got rid of by filtering the solution through glass wool; if so, I should recommend this method in preference to every other. Films coated over with this substratum develop well, and without coming off, and have, after varnishing, comparatively sufficient hardness.

(3). Another method consists in preparing a solution of caoutchouc in benzine, and coating with it the edges of the plate, either before applying the collodion, or after laying on the collodion and before exposing, or after exposure and before developing. I recommend the last of these plans because the benzine varnish will close all the apertures by which the developing liquid could insert itself beneath the collodion. Now, when a plate is removed from the slide, it will be frayed in several places by coming into contact with the sides of the latter, and it is necessary to close these abrasions with the greatest care. By this method we can obtain after varnishing a certain amount of cohesion; but it requires very great precautions, and I should strongly advise amateurs to confine themselves to the first method that I have described.

When the emulsion contains an organic sensitizer—quinine, or any other of the same kind—it is advisable to eliminate it before allowing the alkaline developer to act. By this elimination we can sensibly shorten the time of exposure; but it must be either completely carried out, or else abandoned altogether, and it can only be effectually accomplished by liberal and repeated washings with alcohol. If sufficient alcohol be not at hand, it is better to expose for a little longer time, and to omit this preliminary operation altogether; in this way we avoid the granulations produced by the particles of quinine that are not dissolved. When the emulsion contains no preservative, the washing with alcohol will produce no inconvenience, and will render the collodion more pervious to the developing solution. Of course the washing with alcohol must be followed by copious washing with water until the greasy marks disappear.

Though emulsions may differ from one another considerably in point of sensitiveness, there is another substance which never gives the same result, and that is ammonium carbonate. Were it not that ammonia dissolves silver bromide, it would be best to employ a solution of that substance as a developer; but as it is, ammonium carbonate is preferable to all other substances, only it must be carefully selected in hard semi-transparent lumps that smell strongly of ammonia. As soon as it turns of a

dull white colour it loses many of its properties; on this account it is better to keep a standard or saturated solution of the salt in a well-stoppered bottle, which itself must be renewed from time to time.

It is impossible to give a precise formula for developing bromide plates; in the first place, because two bottles of emulsion often give such different results; and then because the ammonium carbonate is itself a most unstable substance. All the formulæ are good provided that we first mix together all the three substances—potassium bromide, pyrogallie acid, and ammonium carbonate—or that we flow over the plate the bromide and the acid—or the bromide and the carbonate, and then the third substance separately. The only essential condition for developing free from fog is to use from the very first enough potassium bromide, for it is at the beginning of the development that the plate has the greatest tendency to fog. So soon as the image has almost completely made its appearance, the pyrogallie acid or the ammonium carbonate may be gradually added up to the point of the required intensity.

If we make use of an emulsion that requires to be intensified with silver, it is indispensable to wash the plate with water slightly acidulated, so as to remove all trace of alkali, which would show itself either in scattered spots or in a general veil. But I cannot too often repeat that a good emulsion never requires to be intensified with silver nitrate, and that intensification is always the cause of defects and failures which it is desirable to avoid.

When travelling, the great inconvenience of bromide plates is the fixing, to a certain extent on account of the fixing substance, but more because of the large quantity of water required for washing thoroughly. It is true they may be treated with potassium cyanide, and will then not require so much washing; but it is more advisable to dispense altogether with the use of this dangerous substance, which acts sometimes with so much energy on the delicate film as to endanger its cohesion.

Hyposulphite of sodium dissolved in common water in all proportions from fifteen per cent. is therefore preferable from every point of view. But this substance is very dangerous to the vessels and the other chemicals that must be packed up when a long journey is in prospect; it must therefore be isolated completely, and the flasks or beakers in which it has been used must be cleaned with the greatest care.

Another plan is to keep the plates, after they have been developed, in a closed box, and to fix them on the return home, but this operation is then much more difficult. The plates must first be moistened with alcohol, notwithstanding which incurable tumefactions will often occur, which might have been avoided by fixing directly after development.

The diversity of sensitiveness of which I have above spoken may be turned to account, and, instead of being an inconvenience, may become an auxiliary. On a piece of paper gummed to the back of each plate write the words "quick," or "slow," and carry with you on your journeys some plates of each kind. A view presenting great contrasts of light and shade will succeed best on a rapid working plate, while one that is equally illuminated and of a uniform tint can be preferably taken on one of the contrary kind.

Notwithstanding the small difficulties that I have enumerated, the emulsion process will nevertheless remain the greatest advance that has been made in dry plate photography. When we have attained the result of causing the film to adhere firmly, and to make it as sensitive as one of wet collodion, there is no doubt that this process will advantageously replace all others now in use.

ON WAVE-BATH HOLDERS.

BY H. J. BURTON.*

I PROPOSE to make a few remarks upon that kind of bath-holder known as the wave-bath, for I am not yet convinced that the wet process is either dead or dying, notwithstanding the great improvements recently made in dry plates.

Some few years ago I called attention to this particular form of bath, but am inclined to think that photographers have not fully appreciated its merit for studio work. These baths are used exclusively at the Autotype Company's Works, and have been so for the last seven years, therefore full opportunity has been afforded for testing their capabilities. Various materials have been used from time to time, and much useful information gained in their construction. I am convinced that if used for a short time in any studio, the wave-bath would become the favourite, and dipping-baths retained for out-door work only. I will point out a few of the advantages to be gained by the change. Streaky plates: these are unknown, for this reason, but whilst the plate is sensitizing in the wave-bath, it of course lies face upwards, and in that position the ethereal solvents that leave the collodionized surface do so at right angles to the surface of the plate, and have a very thin stratum of liquid to go through to escape. In dipping-baths these solvents have to traverse the whole length of the plate, and in doing so form streaks, by keeping the nitrate solution away from the plate while they are travelling to the surface. I once emptied some bath solution from a wave-bath into a dipping-bath to do an out-door job; I knew the bath was in good order, and therefore was astonished to see the first plate out of it covered with streaks.

As the wave-bath is made with a light-tight cover the dark room door does not require to be closed, except to remove the plate to the dark slide. A slight rocking of the bath is equivalent to lifting the plate up and down an indefinite number of times, as is necessary with the dipping-bath, to remove the greasiness from the surface, and it does it much more completely too. By simply pressing the bath down so that the solution runs towards the well, the plate is drained in the most perfect manner, and without the slightest occasion to close the dark room door. Being in an almost air-tight chamber, a plate may be drained for half-an-hour, and be none the worse for it; at the same time be thoroughly shielded from light as well as from dust.

The advantages of being able to keep plates always ready for use will be considerable in a large business, as with a couple of wave-baths, plates may be always ready to put into the dark slide in the very best condition; there is also the great cleanliness in the dark-slide and camera, as well as a saving in silver through the more perfect draining of the plate.

A plate of a given size may be sensitized in half the quantity of solution required for it in a dipping-bath. The bath-solution will keep in order for a longer time, on account of the larger surface of solution that is exposed to the air. It is also much more easily cleaned out, as the hand may be got into any part of it.

With the present form, it is only necessary to occasionally black-varnish the inside, and give a coat of paint to the outside, to be as good as new; therefore, with ordinary care, it would last a lifetime. In ordinary portrait work where the plates used are up to 10 by 8, I should recommend a bath that a 15 by 12 plate would go into, for this reason: when a plate is draining in a bath that is only a little larger than itself, it must necessarily do so with the base of the plate in an horizontal position; but if the bath were larger, it would be possible to so place the plate that one corner of it should be the lowest, and therefore it would be drained most perfectly.

I will finish these remarks by observing that the best way to clean the bath out is to use a little weak solution of cyanide of potassium and a rough piece of sponge, afterwards

* Autotype Notes.

rinse out with clean water, and finally dry with a wash-leather that has been washed and wrung out, and is still damp. Just before pouring in the bath-solution, dust out with the plate dusting brush.

TWO RAPID PROCESSES.

OUR American brethren are considerably exercised at present on the subject of rapid wet processes; but they have not yet recognized the fact that rapid gelatine plates surpass in sensitiveness any form of wet plate. Our Philadelphia contemporary, in a recent issue, publishes two alleged rapid processes. The first, without a parent's name, is as follows:—

SILVER BATH.

Take any quantity of nitrate of silver, place it in an evaporating dish, and heat, not merely until liquefied or fused, but heat to a red heat for at least two hours. This, if properly done, will burn out all impurities. Allow it to cool, and dissolve in pure water (prepared by adding two or three grains of silver to the ounce of water, and sunning until clear). Reduce to sixty grains to the ounce, and of a thirty-grain solution of iodide of calcium add all it will take up, or until it remains permanently milky. Now reduce to forty grains with the prepared pure water, shake, and sun until clear. Decant, or filter through chemically-pure filtering paper, and add C. P. nitric acid until it tests decidedly acid; let stand twenty-four hours, and add of a saturated solution of sal-soda, one drop at a time, so long as it will take up without showing permanent milkiness. Sun until all is clear, and you will have a bath that will work quick and clear as long as there is anything left of it, provided it is kept in a temperature of not less than sixty degrees, and allowed to stand open when not in use.

Developer.

No. 1.—Water	...	...	...	32 ounces
Iron	...	...	...	2 "
Alum	...	...	...	3 "
Loaf sugar	...	...	...	$\frac{1}{2}$ ounce
Acetic acid	...	...	...	2 ounces
No. 2.—Water	...	...	...	32 ounces
Iron	...	...	...	2 "
Sulphate of soda	...	...	...	$1\frac{1}{2}$ "
Concentrated ammonia	...	...	...	6 drops
Acetic acid	...	...	...	4 ounces

Mix equal parts for use.

For stock, the above can be mixed double strength, and reduced to meet the requirements of the negatives. It acts slowly, but keeps at work a much longer time than any other developer, so that your negative is under control. When the detail is all out, and you wish more contrasts in the lights and shades, take of the bath solution two or three drops of silver in a small vial (a wide-mouthed iodide four-ounce bottle answers the purpose), and in a separate bottle have a three-grain solution of pyrogallol acid mixed as follows: Pyro three grains, citric acid two grains to the ounce of solution. Flow the plate with this, and pour off into the vial containing the silver. Now flow on and off the negative until all the intensity you wish is obtained. If the plate has been over-exposed, so that the image flashes out and then sinks in, wash off the developer at once and clear; if not intense enough, proceed with the pyro as above.

RAPID COLLODION.

For plain stock collodion, take equal parts of Atwood's alcohol and concentrated sulphuric ether; cotton, six grains to the ounce of collodion. First soak the cotton in a weak solution of alcohol and ammonia (one drop concentrated ammonia to the ounce of alcohol); squeeze out dry as possible, then rinse out once in a little alcohol, again squeeze dry, and add to the stock of alcohol; shake up, then add the ether. Shake until the cotton is dissolved.

Samples of cotton of the same brand differ greatly, both in rapid working and in the quantity it will take to make the collodion the required thickness to give best results. For this reason it is always best to test a batch of cotton by mixing and trying a little of it before preparing a quantity.

As a rule, Hance's Delicate Cream Cotton will make the most rapid collodion, but this sometimes proves worthless as to rapidity.

Rapid Iodizer.

Iodide of ammonium	...	...	4 $\frac{1}{2}$ grains
Iodide of lithium	...	...	1 grain
Iodide of calcium	...	...	"
Bromide of cadmium	...	...	2 $\frac{1}{2}$ grains
Bromide of lithium	...	...	1 grain

to one ounce of pure collodion.

To Prepare.—Take the amount of alcohol you wish to iodize, place the iodides in a mortar, and add alcohol, and grind to saturation, and pour off into a separate bottle. Repeat adding the alcohol and grinding until all the iodides are dissolved. Then do the same with the bromides, and pour into the iodizers. With care and proper grinding no water need be added, although a little water, free from any acid reaction, will add somewhat to the rapidity. The longer this iodizer is made up the better it will work. Make for convenience, so that one ounce will iodize sixteen ounces of plain collodion; or if you only wish to iodize eight ounces at a time, make up so that one ounce will do for eight ounces. The plain collodion should be made up in stock, and not less than one month old; six months is better.

After iodizing, it takes ten days to cool, and five days in hot weather, before it is ripe enough to work its best. If kept cool it will improve until about three to six months old, though usually two weeks to three months old will give the quickest and best results.

Caution.—In mixing the iodizer with the plain collodion, always pour the collodion into the iodizer, a little at a time, and shake as you add, until the collodion is all added.

THE RAPID PROCESS OF JAMES INGLIS, MONTREAL, CANADA.

THE second rapid process is described as being sold as a secret to the gullibles by Mr. James Inglis. We copy it from the printed circular supplied by him.

PURIFIED WATER FOR SILVER BATH.

Soft water	...	...	1 gallon
Kaolin, or French chalk	...	...	2 to 3 ounces
Nitrate of silver	...	...	$\frac{1}{4}$ ounce

Put this in the sun until perfectly cleared, which will take about a week.

NEGATIVE BATH.

Nitrate of silver (pure)	...	...	4 ounces
Water (purified)	...	...	48 "

When dissolved, add just sufficient bicarbonate of soda to cause a slight precipitation, which will only require a few grains. Iodize by pouring in about one-fourth of an ounce of the collodion. Now put in the sun for half a day or so. Filter through clean cotton-batting, or a small piece of sponge; filtering-paper is very uncertain. Now add from two to three drops of C. P. nitric acid, or enough to make it work clear. Keep up the strength of the bath by frequently adding to it a fifty-grain solution made the same way.

PLAIN COLLODION.

Alcohol	...	...	16 ounces
Ether	...	...	16 "
Gun-cotton	...	...	192 grains

Iodizer No. 1.

Double iodides	...	...	240 grains
Double bromides	...	...	96 "
Alcohol	...	...	8 ounces
Ether	...	...	8 "

Dissolve the iodides and bromides, first in the alcohol, then add the ether, and let settle before using. There will be a heavy precipitate.

Iodizer No. 2.

Iodide of ammonium	...	...	144 grains
Iodide of cadmium	...	...	96 "
Bromide of cadmium	...	...	48 "
Alcohol	...	...	8 ounces
Ether	...	...	8 "

To six ounces of plain collodion, add one and a half ounces No. 1 iodizer, and one and a half No. 2 iodizer. When the collodion becomes too white, add iodine to keep it a nice straw colour.

TO PREPARE THE DOUBLE IODIDES AND BROMIDES.

<i>Bromides.</i>			
Bromide of potassium...	...	...	175 grains
Bromide of cadmium ...	...	...	220 "
<i>Iodides.</i>			
Iodide of potassium ...	...	...	293 grains
Iodide of cadmium ...	...	...	136 "

Dissolve the two bromides and iodides separately in a small quantity of water, and evaporate them over a gentle heat sufficiently to allow them to crystallize when cold.

<i>Developer.</i>			
Iron ...	...	...	6 ounces
Nitrate of potash ...	...	...	3 "
Acetic acid, No. 8 ...	...	...	8 "
Water ...	...	...	80 "
<i>Re-developer.</i>			
Iron ...	...	...	1 ounce
Citric acid ...	...	...	1 "
Water ...	...	...	80 ounces

By using it as weak again, with (say) one drop of silver solution, and patiently keep re-developing, you will be astonished to see what an amount of detail can be brought out of an under-exposed negative.

THE CARBON PROCESS IN AMERICA.

THE somewhat acrimonious discussion on carbon printing which has been maintained in America for some time past has, for the present, abated. Mr. C. Gentile, of Boston, an apostle of carbon, writes to the *Philadelphia Photographer*, an opponent, in response to some attacks, as follows:—

"If your readers will peruse the journal carefully they will find in Dr. Vogel's letter from Paris a complete refutation of the statement made by Van Loo to Gatehel, in which he says, 'no one was using carbon for portraiture in Paris,' and that 'Wallery, the leading artist there, had discharged his operator (of carbon work), an experienced one, and gave up all hope of success after a six months' trial.'

"It would be impossible for an 'experienced' operator in carbon to fail in getting out good prints in Paris during six months' work. Van Loo must have seen so many processes of printing in the Paris Exposition that he got slightly mixed up. I would refer your readers to page 339 of your journal for November, in which Dr. Vogel states, 'Rentlinger is represented with small and large pictures, all equally well.' A special interest is excited by some large pictures of his made by the carbon process. And, again, farther on, the Doctor says, in the same communication, 'The carbon printing process has found in France quite a number of admirers. Liebert, formerly in America, works exclusively with this process.' What does Van Loo think of that? The Doctor continues: 'Rentlinger has exhibited a large carbon print; Rousseau, Provost, Cavette, Frank, Fabre, &c., exhibit carbon pictures; some of them are in life-size, and very good. Braun, of Dornach, is ahead of all,' &c. After reading Dr. Vogel's letters, your readers will be convinced that the carbon process is not abandoned in France, nor is it likely to be in this country. In this city, only a few weeks ago, one of the most successful and largest meetings of the Photographic Society of Boston that was ever held, was drawn together by photographers being interested in witnessing a very successful lecture and demonstration of the working of the carbon process by Mr. Derham, at Allen and Rowell's.

"Messrs. Allen and Rowell have been successful workers in carbon for many years, and since 1873 have kept one operator, Mr. Derham, constantly employed at carbon

work, and on an average they must use up over two hundred rolls a year of tissue for their own business, besides what they sell to licencees. The display at the entrance to their studio on Winter Street is composed of carbon prints only, and they are now prepared to execute any and all orders from carte-de-visite up to life-size.

"I have printed life-size portraits in carbon in a direct solar printer, using one of Dallmeyer's 18 lenses, in ten minutes, by using a very strong bichromate solution, and from an intense negative.

"In my opinion, one of the principal causes of carbon not being more generally in use, is the apathy and ignorance of the public with regard to carbon, so few knowing anything about it. If it were in demand, Sarony, Kurtz, and others, would put men to work on the process who would get out good prints; but as long as the public are satisfied with silver prints, they are content to let carbon alone. I can name many who have worked it in this country, who have, and are making money by working the process, and whose reputation in the future for making prints which do not fade will be superior to those who adhere to the silver print.

"The majority of photographers who have commenced to experiment in carbon printing have not given it a fair test. They ought to study the nature of bichromate gelatine, so that in their own particular locality it can be successfully worked, for in different parts of the United States a different mode of working is necessary. I should advise all who wish to work carbon to thoroughly study Dr. Eder's prize article on 'The Reactions of Chromic Acid and Chromates upon Substances of Organic Origin, considered with Reference to their Uses in Photography.'

"No operator in carbon can be successful unless he well understands the 'behaviour of chromated gelatine with heat and moisture.'

"If the majority of your readers were to see some of the European journals of photography during the last twelve months, they would be posted with regard to the probability as to the extinction of the use of carbon now and in the future. Never was such scientific discussion brought to bear on the manufacture of albumen paper as is now on the manufacture of carbon tissue. The discussions during the last six months between Dr. Monckhoven and Mr. J. R. Johnson, and also Mr. J. R. Sawyer, of the Autotype Company, cannot help but educate the European photographer with regard to the durability of the colours used in the manufacture of pigment."

Notes and Queries.

MARINE PHOTOGRAPHS.

DEAR SIR,—In reply to "Marine" in "Notes and Queries" in the last issue of your valuable journal, I write to say that I shall be glad to supply him with prints from a number of negatives I took during a four or five years' residence at Ryde, I.W. They are instantaneous pictures, exposed by drop shutter, and represent chiefly the yachts racing during the Royal Squadron, Royal Victoria, and Royal Albert Regattas. As I have facilities here also for taking similar marine subjects, I would do others if required. If he will kindly communicate with me I shall be happy to let him see a specimen or two which, I think, he will be pleased with, for, although troublesome to obtain, the results afford me more pleasure than any other pictures I do. If you would like to see these, I can send them to your office for "Marine" to call and see.—I am, dear sir, yours faithfully, T. J. SCOTT.

4, St. Peter's Street, St. Helier's, Jersey, April 26th.

SIR,—Messrs. Symonds and Co., Marine Photographers, Portsmouth, would be able, in reply to "Marine's" enquiries in your "Notes and Queries," to supply him with photographs of ships, still life, and yachts, &c., in motion.

Portsmouth, April 26th.

The Photographic News.

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PHOSPHORESCENT PHOTOGRAPHS.

WE introduce to our readers, this week, another interesting novelty, not difficult to produce. On another page, Mr. Woodbury describes his mode of producing phosphorescent photographs. The possibility of producing such pictures depends upon the property possessed by some substances of practically storing up light. That is, some substances when exposed to the sun's rays seem to absorb the light, and subsequently emit a phosphorescent light in the dark. To apply this principle to photography, the problem is to find a means of forming an image of particles of such a phosphorescent substance. Many years ago, we remember an ingenious photographer propounding the problem, "How can I form a photographic image in some phosphorescent body?" At that time, when nothing beyond the ordinary silver processes was known, the problem seemed to be insoluble. Now, more than one method probably exists. To Mr. Woodbury's inventive ingenuity we owe the one which has been tested, and is a practical success. The method he employs is known as the "dusting-on" process. It consists in coating a plate with a preparation of dextrine, honey, and bichromate of ammonia, which, exposed under a negative, becomes hardened, where it is subjected to the action of light, through the transparent parts of the negative, remaining tacky where it is protected from the action of light by the denser parts of the negative. After exposure under a negative, the film, as it will be seen, is tacky in the lights of the picture, but hard and dry where light has acted on the shadows. The lights are therefore adhesive and tacky, retaining any fine powder which is dusted in or rubbed into the moist surface. At this point comes in the essential novelty. The powder to be used must be a phosphorescent substance. One of the best known and available is sulphide of calcium; a powder of this substance is applied to the image formed on the adhesive film, and sticks to it in due gradation of the tackiness, as regulated by the action of light which passed through the negative. An image of sulphide of calcium is thus formed, which, the powder being nearly white, is scarcely visible by daylight, but if the image be submitted for a time to sunlight, or bright daylight, or brilliant artificial light, and then taken into the dark, presents a luminous picture, somewhat startling, indeed, in the case of a portrait.

A variety of substances possess this phosphorescent quality: sulphides of barium, calcium, and strontium displaying it in the most marked degree; fluor-spar, carbonate of lime, pearls, diamonds, phosphate of lime, arseniate of lime, and other substances, all showing in their degree this capacity of absorbing light and radiating

it in the dark. The Bologna stone, consisting of sulphide of barium, displays this property in a marked degree. The old Italian cobbler to whom tradition assigns the discovery of the property of this stone, and its use to astonish his friends and neighbours, prepared it by heating red hot with charcoal a piece of sulphate of baryta, found plentifully in the neighbourhood of Bologna. Sulphate of baryta made into a firm paste with gum, or with flour and water, and calcined, will produce the substance. It should be kept sealed in a stoppered bottle.

The phosphorescent property has been utilized in America for the production of luminous clock and watch faces, which readily show the hour in the dark. Professor Morton, in the *Scientific American*, points out the possibility of superseding gas or other incandescent substances as means of illumination by having the walls of a room treated with a phosphorescent substance, which might absorb sufficient light during the day to serve for illumination at night. Dr. Phipson points out that a white-washed cottage exposed during the day to strong sunlight sometimes shines at night with a brilliant phosphorescent light; pure lime or a mixture of lime and nitrate of lime possessing the property in question. The substance used in preparing luminous clock faces is sulphide of calcium, sometimes known as *Canton's phosphorus*, Canton having prepared it by heating a mixture of three parts of calcined oyster shells with one part of sulphur to an intense heat for an hour. It may also be formed by heating gypsum with charcoal. The most refrangible or actinic rays are most active in producing this phosphorescence, or fluorescence.

Mr. Woodbury, so far as we know, is the first to give this property a practical purpose in photography. He applies the sulphide of calcium in powder to the image formed by light on a surface possessing an elective degree of tackiness, and the image being so formed and submitted to the action of sunlight, or even a good artificial light, presents a luminous picture in the dark. Used with judgment, such portraits may be found very interesting; whilst, perhaps, nothing could be more ghastly than the unexpected presentment of such a portrait of a deceased friend.

To those of our readers who may desire to study the question of phosphorescence generally in connection with this subject, we cannot recommend any better assistance than the very interesting work on "Phosphorescence, or the Emission of Light by Minerals, Plants, and Man," issued by Dr. Phipson a few years ago.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY AS A MEANS OF POPULAR INSTRUCTION.

WHEN the art of printing was first invented the influence it was destined to exercise on civilization and on the diffusion of learning was scarcely suspected. The gleams with which Caxton,* Guttenberg, and Laurence Coster enlightened the world are even now giving out their heat; the waves of knowledge which their books have produced have never encountered a dam strong enough to prevent them from forming the intellectual ocean on which floats our civilization of to-day. Photography, as a propelling force, is not far from performing a similar part; wherever it penetrates, there it irradiates, as if to prove that owing its origin to light, it is called upon to diffuse light. The onward march of our art will now never be arrested. In our hours of relaxation it forms one of the most delightful of our recreations. In the family circle photographs refine our leisure, and give rise to countless emotions by recalling to our memories departed relatives and absent friends. The recluse in his chimney corner, by the aid of his album, surrounds himself with friends, and peoples the recesses of his garret. In many a social party a lasting friendship

* I give Caxton the first place, because every day it becomes more certain that your countryman, if not the first to discover moveable type, at least did so independently of others.

is established, for a collection of portraits of this kind is apt to give occasion to remarks on the good qualities of one who is no longer separated from us when we can count the number of miles that he is distant. A photographic portrait, also, will often lead us to speak of the merits of some remarkable man of our time. In art, again, as well as in science, we recognize the value of photography; it displays nature to the artist, and reveals her secrets to the philosopher, while the student has no more powerful aid. In all the departments of the public service our art is made use of. It saves both time and money, for what it reproduces is true. The eyes of the objective cannot be deceived, as are so often those of the draughtsman.

It is, therefore, no wonder that printing, though we thought it already strong enough to do without any extraneous assistance, should borrow from photography many virtues which were still wanting to render its efficacy complete. M. Leon Vidal, my respected colleague, has recently abundantly demonstrated this in a lecture, much appreciated and applauded, which he delivered at the late congress of learned societies at the Sorbonne. The time will soon arrive when an illustrated work not produced by some heliographic process will be hardly deemed worthy of that title. A work, young as it has always been considered on its publication, will henceforth, thanks to photography, be still more rejuvenated, and if it makes its appearance without photographs it will be treated as an old one born a second time. This is almost equal to the art of the magician!

We shall now never be astonished if every day brings some fresh proof of the part that our art is capable of playing in popularizing learning in our art. Only yesterday there has sprung into existence in this country a project which is destined to make rapid progress. It is proposed to organize public courses of lessons, illustrated by photographs, in all the smaller towns and villages, not only in the elementary schools, but for the general public, in the common halls, or even in the market places. There will be thus given in the open air courses of instruction whose benefits will be diffused among the masses (just as a number of commercial houses, to attract customers, advertise in our sheets) by means of illuminated transparencies before the eyes of admiring crowds. The plan on which it is proposed to carry this project into effect will be as follows:—Each locality will have to provide a projection apparatus. This may be, in an important and wealthy centre, the electric light, or in the case of a less ambitious place, some other illuminating apparatus more easy and economical to work. The authorities of the locality will receive from the Government a number of photographic pictures adapted for projection, or when the number of pictures thus offered to it is too small to satisfy its legitimate aspirations, it will be allowed to purchase others at its own expense. At a fixed time during class hours the schoolmaster will give lessons, illustrated by means of these pictures and the projection apparatus, in geography, mechanics, natural history, &c.; at another time, either he, or professors appointed specially for the purpose, will give lectures similarly illustrated to the parents of the children and those of his fellow-townsmen who may wish to take advantage of his instruction.

Lessons given in this way will not only be instructive, they will be amusing and interesting, for they will be of the nature of object-lessons, which are always the most easy to understand. The eye will merely have to look on the moving picture to acquire a knowledge of the country of which the principal views are exhibited, and thus a voyage may be made without leaving one's seat. The audience will be able to see agricultural machines and the new inventions that have been shown at the latest exhibition; the farmer may follow the descriptions of the most recent discoveries which he can, if he wishes, introduce into his business. By this means our rural population may be made acquainted with all the machines and im-

plements of production of our time—with the forms of animals of other countries, with model farms, with the best methods of manuring, with the creatures that live in the lakes, rivers, and seas, in the air, on the trees or the ground, with the old world and its former civilization, with the wonders of the day, with the portraits of celebrated men; and every one, while being amused, will take in a kind of knowledge from which he cannot fail to derive profit in his daily life. Those who are unable to read—and there are many such, though their number decreases every day—will be able to read as from an open book, from the screen on which one photographic picture is projected only to make way for another, each leaving on the mind deep traces which form the seed for an intellectual harvest.

This admirable scheme is just now under the consideration of the French Government, and, if it be carried out, it will certainly be not the least of its glories. Moreover, if doubters or dawdlers be charged with the execution of the work, other countries will certainly be in advance of us. Only a few days ago a foreign gentleman of the name of Levy arrived in Paris, to examine a projection apparatus ordered from Messrs. Moltini Brothers, the well-known makers, who are always ready to give the advantage of their experience and of their excellent instruments to those who have need of them for some useful object. It appears that the apparatus in question is the largest ever yet made, and that M. Levy intends to take it, together with a number of photographs of natural objects, to America, where he proposes to deliver a series of public lectures, and to introduce, at his own cost, the system of instruction which I have spoken of as likely to be undertaken in France by the Government. My best wishes for the success of his experiments accompany M. Levy. No doubt will be felt in England as to that success, nor will my wishes fail to find an echo there—England, that classic land of lectures and conferences, which has done so much by its powerful example to excite a taste for them in other countries.

It is always with a feeling of legitimate satisfaction that I bring into notice the valuable results of the applications of photography. Niepce and Daguerre probably never suspected, when they discovered the sun to be so true a draughtsman, that their invention would be a foundation on which would be raised so marvellous a superstructure. We can scarcely sufficiently acknowledge the services they have rendered to mankind, and in paying only a just tribute of admiration to their illustrious memory (in which they ought never to be separated), we are unable to give enough praise to the efforts of those who, in their turn, endeavour to learn from photography the lessons it so abundantly teaches. For this reason we ought to applaud with all our heart any attempts to diffuse a taste for photography by means of lectures and public courses of instruction, and I shall always feel it my duty to support, as far as I possibly can, men who, like M. Bary, M. Davanne, and M. Leon Vidal, make it their aim to develop the scientific applications of our art.

I welcome with pleasure, in spite of their mutual jealousies of each other's position, the formation of new societies whose object it is to keep alive the sacred fire and to maintain the zeal of the photographic world. Such are the *Société des Employés en Photographie*, which has recently published a report on the works of the profession exhibited at the late International Exhibition; the *Union Photographique de France*, which proposes to hold its first quarterly meeting on the 7th May next; the *Société des Archives Photographiques, Historiques, et Monumentales*, which, although the oldest of these new societies, has shown so much spirit that, in spite of the bad weather, it successfully accomplished its second artistic and scientific excursion that had been announced for the 20th of this month (April). This excursion was to the full as great a success as the first one.

As being in connection with the same subject, I shall always follow with great interest the endeavours made in various quarters to promote the study of photography by organising its means of action. For instance, just at the present time it is reported that a project is on foot for the establishment of a special photographic branch in one of the ministerial departments in Paris. My sincere wishes for its speedy realisation accompany this project. To concentrate individual efforts and give them a collective force, is not only a want of our Government when it is a question of an art which constitutes the most valuable application of science of our age; it is more—we cannot all of us but desire, for the sake of the results obtained, that this art may be officially proclaimed to be worthy of an important place in the public service. K. VERSNAEYEN.

EPHEMERAL PHOTOGRAPHY.

BY WALTER B. WOODBURY.

In the present day, when everyone is searching after permanency, the title of this article will seem out of place, therefore I had better explain that what I am about to describe is simply a pretty and interesting experiment (new, I believe), by which photographers may amuse their friends and lecturers their audiences.

The process is simple, and has this advantage: that the same piece of sensitized paper may, owing to its ephemeral nature, be used over and over again, and at the same time always retain its sensibility.

The material is the phosphorescent powder, sulphide of calcium obtained by calcining oyster shells and treating with sulphur. A sheet of paper is coated with this by covering with gum or varnish, and dusting the powder over it. If this paper is exposed for a few seconds to light under a positive, and then removed to a dark room, a luminous positive will be seen, lasting a longer or shorter time, according to the exposure given.

I have also produced phosphorescent portraits and views by the dusting-on process, substituting the powder for plumbago.

These experiments, although of little value scientifically, are interesting, and add to the uses that the phosphorescent properties of the sulphides have been put to. Given the same strides that electricity has made, it is perhaps possible that in fifty years to come, the study of phosphorescence may make equal advances, and photographs may be taken at night by the aid of the light that emanates from the walls of the studio.

The old story of the cucumbers and sunbeams, like many another fable, is becoming a reality in this era of advance in science.

IMPROVED DIPPER.

BY E. DOBSON.

I was for some years troubled with breaking of glass and porcelain dippers, to say nothing about the number of plates that slipped off the dipper; so I made one myself which I am pleased to say has never failed me; no matter in what position the dipper may be, the plate cannot leave it. I enclose a sketch from which any boy can make one. The one I made is of box-wood, and although I have worked it for over twelve months, it does not injure the bath.

Fig. 1 is the dipper of box-wood with three holes cut through No. 1, 2, and 3; from the bottom of these three holes, slots are to be cut in No. 1, as low as the top of the smallest plate to be used (mine is a 10 by 8 plate bath, but I use it for $\frac{1}{4}$ -plates). Slots from holes No. 2 and 3 must be cut so that when the piece, fig. 3, is put in the holes, it comes within half an inch of the bottom of the bath.

Fig. 2 is a piece of box-wood cut to shape, and bevelled outwards at bottom with a projecting piece at back; at the end of this piece it is cut like a button; this button is slipped

through the hole No. 1, and can then be slid up and down the dipper, and it does not matter what thickness the plate, it will hold it.

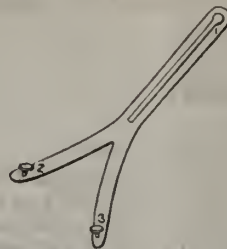


Fig. 1.



Fig. 2.

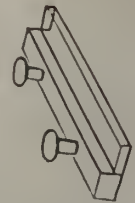


Fig. 3.

Fig. 3 is a piece cut with two button-like pieces which are slipped through holes No. 2 and 3. Although it seems rather complicated, so simple is it that one can almost be made in the time it takes to describe it.

A NEW DEPARTURE.

Mr. D. N. CARVALHO writes to *Anthony's Bulletin* as follows:—

"Since the inception of and production of the photographic image, the efforts of all seem to have lain in one direction, viz., to be able to obtain with a very short exposure a full-timed negative. Chemistry has been peered into, wonderful discoveries productive of varied results obtained; but still the desired goal of being able to work and use all one had to work with was as far off as ever, from the simple fact that there would be times when the chemicals would work slowly from other than natural causes.

"Working under a skylight, the room being painted a sort of brown, and which room the week previously had been of the 'orthodox blue' found in most of the studios throughout the country; working with the same instruments and under pretty nearly the same conditions. I noticed that it took less time to make a negative in the brown than it had done in the blue room. Here was food for thought. Was this so? and, if so, why? I then began a course of experimenting with the following wonderful results. Of the various colours of the spectrum the violet we find to be the most 'actinic,' and the yellow or orange ray the 'non-actinic.' Now take a clean wine-glass filled with some transparent blue liquid, place the glass on a clean sheet of white paper, permit a ray of light to pass through it, and you will find the shadow cast by it to be orange; likewise does a blue substance reflect orange, both being complementary to each other—so that a gallery painted blue reflected on the sitter orange, making it necessary to lengthen the exposure in order to overcome this non-actinic effect. The brown-painted gallery absorbed the light, to a great extent, leaving nothing but what entered through the skylight.

"It then occurred to me that, if I could find a colour to reflect a 'violet,' I might thus be able to use advantageously all the light. I found not only the above result in experimenting, but that of the three colours, blue, red, and yellow, or orange, each and every one reflected a combination of those remaining; thus, if blue reflected orange, orange in return complemented and reflected blue, red reflecting green, and green, red; then green + yellow reflects red + blue, or its equivalent, purple. The purple obtained, it was an easy task to obtain the 'violet,' which was produced, or rather reflected, from a colour resembling somewhat an orange pea green. I had my skylight room immediately coloured as near as possible to what I had attained, and here is what happened: where formerly it took from thirty to forty seconds to make a large 4-4 head, by the 'new departure' fifteen seconds was more than enough, twelve seconds being ample time, and under very favourable circumstances six to eight seconds. But there is one trouble to overcome: things work so quickly that it is hard to control the light.

"Another feature in regard to this orange-green painted gallery: there is no complaint about the light being too strong for the sitters' eyes, green being, as is well known, the restoring colour. The reflection of this colour, violet, also renders the high lights more positive, and the shadows softer."

Correspondence.

PHOTOGRAPHIC PARADOX, ETC.

DEAR SIR,—Has not Mr. Murray gone rather beyond the general belief in supposing that the blue and violet rays are not required for gelatino-bromide plates? Some five years close experimenting in most of the dry processes published—and gelatino-bromide especially—during which I have tried all the "pizins" in the pharmacopeia as accelerators, preservatives, &c., &c., with the object of getting the most rapid dry process possible, has gone far to convince me that while, undoubtedly, the red end of the spectrum has a considerable effect upon gelatino-bromide, it is yet very sensitive to the rays at the other end, and I am by no means prepared to concede that it is relatively so much slower in proportion to wet work *at its best* as some people seem to imagine.

Perhaps you will allow me to thank Captain Ahney for his articles on the spectrum rays intercepted by the various coloured glasses and dyes.

Some years since, when I first discovered the extreme sensitiveness of gelatino-bromide with extended digestion before washing, as pointed out by me in your YEAR-BOOK, I had to discard the use of coloured glass, finding it almost useless, and I have ever since used dyes, finding a thick chrysoidine varnish of the most service, sometimes using aurine, but, so far, not touching magenta. I shall now, I apprehend, be practically invulnerable to actinic light.—Yours truly,

RICHARD PARR.

DRY PLATES AND THE CHROMOGRAPH.

SIR,—The attention of dealers is called to the above. In regard to the first, it is pretty well understood that the English claim and take the first rank as the makers and preparers of such articles, and it would be to their interest to make representations to the proper authorities connected with the Customs that an arrangement should be arrived at for the package of such prepared articles without the chance of their destruction by exposure to light. They should also, as dry plates are in increasing demand at home, have some security for their transit on parcel terms, without the risk of being opened or spoilt by Post Office officials. Amateurs are spread about in hundreds of out-of-the-way places only to be reached by post, so that dealers would consult their own interest by moving in the matter. Combined action, as in the recent case of the *Papyrograph*, &c., would do much for them. As your French Correspondent has given some valuable information in connection with the Chromograph, it might answer the purpose of some of the photographic dealers who use the pages of the NEWS to get an agency from the inventor of the Chromograph, as it would evidently, from its small cost and simplicity, be of much use to authors, artists, and antiquarians, and a great demand would probably come in from amateurs, school-teachers, and others who may require from thirty to forty copies of some particular note or outline sketch.—Yours, &c.,

THE OLD HAND.

BUILDING A STUDIO.

DEAR SIR,—Since writing to you, I have run over various clauses of the Metropolitan Building Act, and can see no way of fully meeting its requirements but by some such arrangement as you suggested; but I think if plans were

submitted to that or any of the provincial Boards before commencing, they would permit the erection of such a studio as I described in the YEAR-BOOK, provided the outer sheathing of roof, sides, and ends were made of galvanized iron, which can be obtained (corrugated) of various thicknesses in sheets six feet by two feet three inches.

I have run out one or two ways of putting up the frame of such a studio of angle or T-iron, and like it so much that if again erecting one I think I should use it; but on jotting down the number of holes to be drilled, and pieces to be bent and cut at the forge, it is painfully evident that no ordinary (photographic) amateur would tackle such a job, for which reason I think it is scarcely necessary to trouble you with fresh plans and details, and content myself with showing how, and at what cost, the wooden frame of the studio I described can be covered with corrugated galvanized iron, a sheet of which, 20-gauge (or decimal .035 of an inch) thick, six feet long by two feet three inches wide, weighs, as nearly as I can estimate it, about 23lb., and can be cut with a pair of tinsmith's shears (costing about 3s. 6d.) Six feet, however, will be found too short to cover one side of the roof, and rather than join it I would reduce the height of the ridge to nine feet, which I prefer to a higher roof provided it can be kept watertight (and this will be easy with such material); if the frame is put up and it be intended to substitute iron sheathing for wood, I would of course join the iron rather than alter the frame. The iron is to overlap at the joints three inches, and be riveted with quarter-inch rivets about three-eighths of an inch long, and it must be nailed to the framing with one inch rose-headed nails, and the heads puttied. The holes can easily be punched *in situ* with the joiners' punches, one-eighth of an inch for the nails, and quarter-inch for the rivet-holes, a lump of lead weighing five or six pounds being held behind the plates at the rivet-holes, using a heavy hammer (one pound and a quarter).

The roof sheets must be nailed on with a space of an inch between the opposite sides at the ridge, so that a strip of wood one inch square, twenty-four feet long, can be nailed on the ridge, to which must be nailed strips of the iron cut lengthways of the plate, one "curve" wide, the convex side uppermost, and the side, of course, overlapping. The roof-pieces will overhang about two inches at the eaves, and must be so arranged that the curves fit *into* those of the side sheets, making a close joint. Fifty-one sheets of iron will be required, weighing (say) ten and a-half hundredweight, and it can now be bought at about 26s. per hundredweight, or less, say £13 13s., the cost of the studio being (say) 20 guineas, as follows:—Deduct from cost estimated for wood (£10 16s. 6d.) cost of floor board £3 18s., nails 3s. 2d., and asphalt and brush 6s., leaving cost of framing £6 9s. 4d., to which add the cost of the iron, and (say) 3s. for nails and rivets—6 lbs. at 6d. An iron frame would add about £4 or £5 to the cost, besides a large amount of labour; and if any of your readers are inclined to incur this, I will send details, provided you think it worth while.—Yours truly,

RICHARD PARR.

Proceedings of Societies.

WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

THE ordinary monthly meeting of the above Society was held on Monday, the 7th inst., at the Market Tavern, Bradford, Mr. JOHN HOWARTH, President, in the chair.

After the confirmation of the minutes of the previous meeting,

A lantern exhibition was given by the PRESIDENT, ably assisted by Mr. W. T. BURROW, who, in an interesting manner, described the various pictures depicted upon the screen, at the same time criticising the quality of each transparency, most of

which were by the Woodburytype Company and by Ferrier, of Paris. At the close of the exhibition a very cordial vote of thanks was given to the two gentlemen for their highly interesting entertainment and gratuitous use of Mr. Howarth's sciotipcon.

Mr. BURROW thanked the ladies and members present for their kind attention and attendance.

Mr. HOWARTH also thanked them, and was pleased to see such a good attendance, which he thought augured well for the future success of the Society, and hoped it was only preliminary to many more such evenings together.

After some desultory conversation, the SECRETARY announced that Mr. Garrett had promised to read a paper at the May meeting, which would be the last indoor meeting for the present session.

The CHAIRMAN announced the meeting adjourned until Monday, the 5th May.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE monthly meeting of this Association was held on Thursday evening, the 24th ult., at the Free Public Library, William Brown Street, Mr. J. H. T. ELLERBECK, Vice-President, in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. E. ROBERTS showed a number of capital transparencies taken on gelatine plates, and in reply to inquiries, said that he prepared two ounces of emulsion by putting one and a-half ounce of water into a three-ounce bottle, dropping into that fourteen grains of bromide of ammonium, and, when dissolved, putting in forty grains of Nelson's photographic gelatine, and dissolving by placing the bottle in hot water. He then dissolved twenty-two grains of nitrate of silver in half-an-ounce of water, and poured it into the gelatine. This made up the two ounces. After shaking up well and keeping warm (say 90°) for forty-eight hours, the emulsion was then filtered, and the plates coated. When the films were set, each plate was dipped for a few moments in cold water and set up to dry. The formula was much the same as what had been already published by Mr. C. Bennett, but washing the plate after coating simplified the making up of the emulsion, and though Mr. Roberts had only used the plates a week old, they were quite as perfect as any he had seen.

The President of the Manchester Photographic Society (Mr. C. ADIN) sent some capital portraits taken by the luxograph light for presentation to the album. Several of the portraits were recognized by the members, and considered excellent examples of the success of the light.

The Rev. H. J. PALMER then read a paper on "Notes of Comparative Experiments with Gelatine Emulsions" (in our next).

Some discussion followed, and objections were made to Mr. Palmer's statement as to the rapidity of some plates against others.

The SECRETARY said he found no difficulty in obtaining the requisite density in landscape negatives with Swan's plates, provided that the development was with ammonia, and not hurried. The prints he handed round were groups secured during rain in dull light, and views in sunshine, all taken with the same single view lens, exposure ten to fifteen seconds, and they were all that could be desired. The groups were of a wedding party, and though other plates had been used with four times the exposure and full aperture of a rapid lens, only failures were the result. He should recommend Swan's plates for such occasions, not only for their convenience and rapidity necessary in taking groups, but also as they did not give such great contrasts between the light dresses of the ladies to those of the gentlemen.

Mr. H. WOOD showed some views taken at Hale, to induce members to go there with their cameras.

Mr. W. B. ROBERTS exhibited a number of views of Trefw, &c., taken on gelatine plates after Mr. Houlgrave's formula.

Votes of thanks were passed to the Rev. H. J. Palmer, Mr. Adin, and to Mr. J. B. Payne, of Manchester, who had forwarded for distribution among the members a number of his very handy developing instructions for the different photographic dry plates.

An excursion was announced to Bromborough on the 10th instant, and the meeting was then adjourned to the 29th instant.

PHOTOGRAPHIC SOCIETY OF FRANCE.

At the meeting of the 7th March, M. PELIGOT, Member of the Institute, in the chair, Mr. WOODBURY was present as guest.

After the admission of new members, the SECRETARY drew

attention to a circular letter signed by M. G. C. Levey, announcing the opening of an international exhibition of arts and manufactures at Melbourne, Australia, on the 1st October, 1880. Hopes were expressed that French photographers would be well represented on this occasion.

M. PERRET DE CHAUMEUX read some extracts from the foreign and home scientific journals. In the *Moniteur Scientifique* there was described a method of making stoppers of caoutchouc. To cut out these stoppers it is better to keep the knife moistened with a solution of potassium carbonate, instead of caustic soda or potash as is generally done. By keeping the caoutchouc pressed firmly on a piece of cork until the elastic stopper is completely cut out, its diameter will be prevented from contracting. An article in the *Photographische Correspondenz* recommended the use of sheep's wool instead of cotton for filtering collodion. The neck of the funnel must be fitted as loosely as possible, when the woollen fibres will be found not to be liable to stick together, so that filtration could be continued with the same substance for a great length of time.

M. DAVANNE observed that M. Ferrier had for more than fifteen years successfully used wool for filtering, not only collodion, but also albumen and gelatine; he employs the common wool of commerce freed from grease, and to remove the last trace of fatty matter he dips it in a little ether.

M. PECTOR also stated that he had adopted this plan of M. Ferrier, and with the best results.

A discussion arose upon a translation being read of Captain Abney's paper on gelatine emulsions which appeared in our issue of the 21st February last. Fears were expressed that drying the film by immersion in alcohol, as recommended by the author, would cause the gelatine to wrinkle, as some years ago M. Placet had taken out a patent for producing by this means a grain in plates for engraving.

The PRESIDENT also remarked that the rarity of the salt would prevent potassium nitrite from being extensively used.

M. BARDY objected that the saltpetre left in the emulsion is not the cause of its keeping; he had himself preserved emulsified gelatine for more than a year after having completely dialysed it; but the results obtained were precisely the same as those described by Captain Abney.

M. DAVANNE exhibited Mr. Woodbury's new actinometer, which has already been described in our columns (see PHOTOGRAPHIC NEWS for 14th March, page 127).

Mr. WOODBURY also exhibited some specimens of paper filigreed by means of photography; but as he did not explain his method of making them, it is supposed to be the same as that which he patented in 1867.

A paper by M. MAGNY was read describing a method of removing negatives from glass plates. He first mentioned the different processes of the same kind that had been previously published, and pointed out their defects. His own method consists in removing the negative from its glass support to a sheet of gelatine by means of a transfer paper. The latter is prepared by dissolving over the water bath—

Gum-arabic ...	...	...	25 grammes
Water ...	...	...	100 c.c.

To which—

Gelatine ...	...	...	0.5 gramme
Glycerine ...	...	...	3 c.c.

have been added to render the gum less brittle. After this solution is filtered, a sheet of paper is coated with it, either by floating the paper on it, or by applying it to the latter with a brush. Great care must be taken to avoid air-bubbles (if they form they must be removed with the finger), and the plate is then hung up by a couple of pins to dry. The negative that is to be detached should have been taken on a glass plate well polished with talc; this plate is plunged in water, a piece of the transfer paper of the same size as the plate is floated over it, and both are then lifted out together, carefully drained, and placed between two sheets of blotting-paper; upon these is stretched an india-rubber cloth, and the whole is then gone over, lightly but regularly, with a wet squeegee. The excess of gum is then drained off, and the plate is next placed for a few minutes under some plain surface, weighted, so as to produce pressure. When the weight is removed, the paper is cut round at a distance of from two to three mm. from the edge of the plate, and, after being sponged lightly with a wet sponge, it can be drawn smoothly and regularly off, bringing the negative with it. Now to transfer this negative a second time, a sheet of commercial gelatine must first be immersed in water containing from three to four per cent. of

glycerine, and allowed to soften; it must have been cut to a size about one centim. larger all round than the glass plate which is to serve as its support. This glass plate has previously been coated with plain collodion, and afterwards washed and dried; it is slipped underneath the gelatine sheet, and both are lifted out together as in the former operation. It is then placed on a stand and levelled by means of screws, and the excess of water as well as all bubbles are squeezed out at the edges by means of a flat brush moistened in water. As much water as the gelatine will hold is now dropped on it from the brush, and the paper negative is drawn over it, commencing at the lower part and passing regularly to the top, so as to remove all excess of water. The glass plate is now raised, and, as in the preceding operation, placed between two sheets of blotting-paper underneath an india-rubber cloth, and the whole is then gone over with the wet squeegee. By placing it in a printing-frame until the gelatine has set, the overlapping portions of the latter can be turned back over the edges of the plate; the paper is then allowed to dry, care being taken not to hasten the desiccation by raising the temperature, or the gelatine will be liable to split off the plate before the drying is complete. The plate is now plunged in a pan of cold water, and after two or three minutes the paper can be raised and easily drawn off, leaving the negative on the gelatine. Lastly, when the sheet of gelatine is quite dry, it is cut round at a distance of from one to two mm. from the edge of the plate, when it separates without difficulty. A negative treated in this way can be retouched with the greatest facility.

M. BARDY read a paper on the various substances that were proposed as substitutes for yellow glass in lighting photographic laboratories, and investigated their comparative value for this purpose. His paper was illustrated by a series of demonstrations of the spectra of these substances projected on the screen by the oxy-hydrogen lamp. The demonstrations were made by M. Laurent with an apparatus of his own construction, which he had been good enough to place at the disposal of the Society.

PHOTOGRAPHIC SOCIETY OF BERLIN.

AN ordinary meeting of this Society was held on the 6th March, Herr C. BRASCH in the chair.

The report was read of the committee to whom had been referred the examination of Voightlander's Euryscope, and the investigation of the value of the process by which a current of galvanic electricity is made to pass diagonally across a sensitized plate during the exposure. On the first point the committee reported that they had compared the Euryscope with a Portrait Triplet Objective by Busch, and from that it worked about one-third slower, but gave much sharper definition and greater depth. The angle of aperture without diaphragm is only 15° ; on the other hand, the chemical focus is all that could be desired. As regards the action of an electrical current on an exposed plate, the results obtained by experiment were purely negative; the committee, therefore, hardly felt in a position to express a decided opinion on the merits of the process. The current, which was excited by a single element only, was so weak that some doubt arose whether inserting the plate had not increased the resistance to such an extent as to interrupt it altogether. For this reason the committee propose to renew their experiments under more favourable circumstances.

Dr. JESSEN brought to the notice of the meeting the glazed starch of Herr W. Kruse, of Stralsund, which he recommended as a most excellent preparation for the use of photographers. He also submitted a collection of collotypes by Messrs. Strumper and Co., of Hamburg. Apart from the careful execution and delicate appearance of the prints, the whole collection had a peculiar interest of its own, as offering almost an historical view of the collotype process.

Dr. STOLZE observed that in some of these prints the high relief had been considerably crushed, a mishap very difficult to avoid in collotypes. He also pointed out the existence of white lines, which he attributed to defects in the rollers.

Herr T. JOOR took advantage of the opportunity to make some remarks on the manipulations required in the collotype process. Contrary to ordinary photographic processes, in which the chief difficulties have been overcome when the negative is completed, these difficulties show themselves only in the collotype process in the preparation of the printing plates, and in the printing itself. Very often small spots appear on collotype plates, which are caused by small air-bells in the gelatine layer while in a fluid state; to get rid of these bells occasions great

trouble and annoyance. Great attention should be paid to the temperature in drying, which ought to be maintained constant at 45° R.

Herr A. ORR sent several specimens of carbon printing for exhibition at the meeting, illustrating the possibility of producing by the carbon process all the different kinds of drawing in chalk, Indian ink, pencil, &c. Some of these he presented to the Society for the portfolio.

At the next meeting of the Society, on the 20th of March, the chair was again occupied by the President, Herr C. BRASCH.

Dr. STOLZE was called on to give the continuation of his paper on his "Photographic Experiences of Travel in Persia." This consisted principally of an interesting account of the dangers and trouble accompanying the transport of chemicals and apparatus in a country like Persia, where a good road is an unknown quantity. Especial difficulty was met with in the carriage of volatile fluids like ether: when he first came to Persia, the speaker, on arriving at his place of destination, often found his bottles of sulphuric ether quite empty. Dr. Stolze recommends, as the only reliable luting for bottles, a mixture of sulphur and ground brick, which is melted, and in which the necks of the bottles, previously well corked, are then dipped. As regards landscape photography, he mentioned the interesting fact that in countries so near the equator as Persia, it is often advisable to work against the sun, and not under it, as is generally done at home. Employing the latter method, the almost vertical shadows would render the pictures very monotonous; but if taken against the sun contrast would—at least, to some extent—be secured. For the objectives to be used Dr. Stolze recommends the Pantoscope and Steinheil's achromatic combination whose anterior lens has been removed; with the Pantoscope and a very small diaphragm he had taken on an emulsion plate in the space of ten seconds negatives showing perfect depth and penetration.

On the subject of luting for bottles, Herr KARDATZ alluded to his own experiences in China, where he had found an india-rubber capsule to act perfectly. Dr. Stolze rejoined that the circumstances were quite different: Herr Kardatz's bottles were during the whole journey packed in the cool hold of a ship, and were first opened in China, where the temperature is comparatively low. Under a great heat the india-rubber corks would melt and spoil the contents of the bottles. It is well known that ebonite pans are in hot climates a standing danger for the silver bath. The only reliable means of stoppering bottles was the English method, which consists of a glass plate ground true.

Dr. JESSEN believed that plaster of Paris stirred into a solution of gum produced a perfectly air-tight luting.

Herr E. DUBY presented to the Society, in the name of Messrs. A. Braun and Co., a highly valuable collection of carbon prints. These prints are a proof of the pains taken by the house of Braun to maintain its position in the field of carbon photography; they are distinguished for great depth, sharp definition, and soft gradation. The same gentleman also exhibited a series of transparent positives by Herr F. Wilde, of Gorlitz, produced by his new process. An albumenized plate is coated with a special collodion containing silver; this is printed under a negative until a thoroughly over-exposed print is obtained. Without any intermediate washing, the plate is then placed in the fixing bath and well rinsed. The details of the process the speaker was unable to give, as they are kept secret by Herr Wilde; but several members present expressed an opinion that they depended on the formation of a collodio-chloride of silver, more especially as on some of the positives traces of gilding were discernible.

The meeting came to the conclusion that the new process is capable of great things, provided the necessary operations be carried out neatly and accurately, and carried a unanimous vote of thanks to Herr Wilde for his very interesting exposition.

Talk in the Studio.

INSTANTANEOUS DRY PLATES.—We have been favoured by Messrs. Wratten and Wainwright with some marvellous examples of the work of the gelatine emulsion plates, consisting of boat race scenes, in which the river and its banks, crowded with moving figures and craft of all kinds, from the slender and swift outrigger, to the massive steamboats, are wonderfully depicted in motion. Fine natural clouds, produced with the same exposure on the same plate, give pictorial value to the photographs, which are very excellent and marvellous.

THE LATE MR. W. PETTER.—On the 3rd inst. died Mr. William Petter, who was traveller for the house of Atkinson, Liverpool, over twenty years, at his residence, 129, Kensington, Liverpool, at the comparatively early age of fifty-five, after a long and severe illness. He will be remembered by many photographers throughout the kingdom as a courteous, and, at the same time, smart business man, and as one of the earliest of a now numerous class of photographic travellers on the road, and was esteemed and respected by all with whom he came in contact.

MOUNTING CHROMOTYPES.—*Autotype Notes* says: "Mr. Hawke, of Plymouth, has sent us some most admirable Chromotypes, very ingeniously treated, and very artistic in their effect. The negatives are masked square, oval, or with round corners, and printed so as to leave a white border, developed on glass in the usual way, the transfer paper applied as usual, and an extra sheet placed upon the plate so that the picture can be stripped as a thin card; when dry the prints are trimmed in a card-board cutting-machine to about the size that ordinary cartes are trimmed, they are then mounted by the extreme edges only with Russian glue, and placed under light pressure for a few moments. This mode is singularly effective, does away with all the trouble of double printing, allows the name of the artist to appear below the photograph, and, when pressed out as cameos, make very attractive pictures."

CONTINUOUS MEASUREMENT OF DAYLIGHT.—It is greatly to be desired that a good and simple method may be found of recording and measuring with some accuracy the variations of daylight throughout the day. This would render the weather record more complete, and it has an important special bearing on plant physiology. An attempt of the kind has lately been made by a German, Herr Kreusler, who has had made for him, by Liebertz, in Bonn, an apparatus with the following arrangement. It consists of a drum fixed with its axis in the plane of the meridian, and adjustable so as to be at right angles to the sun's rays. This drum has its border divided into 24 hours, 12 noon, and 12 midnight being in the meridian plane. A strip of paper, sensitized with solution of bichromate of potassium, and having divisions which correspond to those on the drum, is placed round this. A second drum closely surrounds the first, and is turned by clockwork (from which it can be detached) once in 24 hours, in the direction of the sun's apparent course. This second drum has a slit for admitting light to the paper; its width is such that any point on the paper is exposed 20 seconds as the slit passes over. The whole apparatus is placed in the open air under a glass bell jar. Its arrangement gives little trouble; the paper strip has merely to be placed in its position at night or under artificial shade (to avoid colouration) and the outer drum slid over and so attached to the rotating axis that the "insolation slit" is opposite the hour then present. The slit then begins to move round the inner drum correspondingly to the sun's course. The impressed slip, when removed in the evening, may be "fixed" by shortly dipping in water and drying between blotting-paper, or it may not, being quickly read; it shows a mostly continuous succession of bands of various shades of black, or rather brown. For comparison, Herr Kreusler made a scale of 10 degrees of darkening, exposing strips of the paper a given time under different angles of incidence of light. Bands of the experimental strip that appear homogeneous are now measured with reference to breadth (minutes and seconds) and intensity (by comparison with the scale), and the sum of the products of those quantities is taken as a measure of the action of light rays falling on the instrument in a given time. The results are considered highly satisfactory.

—*Times*.

To Correspondents.

H. H. PHOTOGRAPHER.—It is quite certain that you must have failed in carrying out the instructions at some point; but we are sorry that we cannot tell you where. If you faithfully work out a formula which has given successful results to others, it would give you the same success. Only failure at some point could cause failure. The rapid gelatine process doubtless requires care at every stage, but at which stage you would be most likely to fail it is impossible to say. If you have succeeded in developing commercial rapid gelatine plates, it is not likely that your failure is in the development, but must be in the preparation. If there is fog you would generally see some trace of the image through the fog. 2. As we understand, none. 3. We should use common water, finally rinsing with distilled water.

A. Z.—The lens you have will serve for most purposes. For street scenes with moving figures, a lens of the compound or portrait combination will often be found desirable. We prefer the first-named maker. Compound stereographic lenses are suitable for street scenes and other instantaneous work, and for portraits.

J. S.—Various methods of albumenizing glasses have been described. We think the simplest and best is that in which the albumen solution is applied with a Blanchard brush, made by tying a piece of swan's-down cotton over the end of a stout strip of glass. An ounce of albumen in a pint of water, well beaten together, will serve. Some operators prefer it a little stronger, and use half the quantity of water.

A COMBINATION PRINTER.—Lane's Combination Printing Frame is manufactured and sold by Messrs. Maull and Fox, Cheapside.

SOUTH DEVON.—We presume they are similar, if not precisely the same; probably, both prepared by the same formula.

DIONORIUS.—If you read Mr. Bennett's paper on gelatine plates, in our last volume, p. 511, you will find he describes the precise effect of keeping the emulsion. It is very easy to keep the dried gelatine pellicle ready for making just as much emulsion as you may wish to use. But there is change taking place in the emulsion. Mr. Cooper and various other experimentalists have given their experience in this direction.

J. R. D.—The proportion of pyroxyline for negative collodion must depend on the quality of the pyroxyline. About 4 or 5 grains form an average proportion. But we have used pyroxyline of which 3 grains made a thick collodion, and we have one in which 10 grains gave a limpid collodion. A powdery sample made at a high temperature will often give a good collodion with 6 or 7 grains. We prefer about equal parts of ether and alcohol.

Several Correspondents in our next.

METEOROLOGICAL REPORT FOR JANUARY

BY WILLIAM HENRY WATSON, F.C.S., F.M.S.

Observations taken at Braystones, near Whitehaven,
36 feet above sea-level.

Date.	BAROMETRIC PRESSURE.			TEMPERATURE IN THE SHADE.			REMARKS.
	Morning.	Noon.	Night.	Morning.	Noon.	Night.	
1	—	—	—	35°	42°	35°	Fair, but windy and cloudy
2	29.67	29.75	29.70	25	33	31	Fair but cloudy. Rather windy
3	29.47	29.39	29.48	34	35	25.5	Fair, generally bright
4	29.57	29.57	29.87	33	33	33	Fair, clear, and sunny
5	—	—	29.98	31	33	26	Fair, clear, and sunny
6	30.01	29.94	29.98	25	34	35	Fair, but cloudy. Windy at night
7	29.80	—	29.53	34	31	29	Fair but cloudy. Quite a gale of wind all day
8	29.57	29.60	29.81	30	36	31.5	Fair and bright, generally windy
9	29.90	29.87	29.70	32	32	32	Fair, but cloudy
10	29.57	29.50	29.43	32	32	32	Fair, but cloudy
11	29.47	29.49	29.60	25	32	22.5	A little snow this afternoon. Cloudy
12	29.78	29.81	29.64	21.5	31	36	Snow this afternoon, with rain at night
13	29.68	—	29.87	40	45	59	Rain this morning. Gloomy all day.
14	29.52	—	29.30	43	—	43	Rain and wind a.m. and p.m.
15	29.33	29.48	29.68	31	40.5	32	Fair, generally bright
16	29.78	29.80	29.92	28	35	27	Fair and bright
17	29.98	29.92	29.79	28	34	37	Fair, but cloudy. Very windy at night
18	29.70	29.80	29.98	38	40	36	Rain a.m. and p.m.
19	30.15	29.15	30.12	31.5	38	31	Fair and bright. Windy
20	30.02	29.90	29.83	27	32	28	Fair, generally bright, but windy
21	29.82	—	29.92	25.5	—	27	Fair and bright
22	29.96	—	30.03	25	32	25	Fair and bright
23	30.00	30.02	29.96	20	32	21	Fair and bright
24	29.92	29.95	29.98	24	33	31	Fair, but cloudy
25	30.00	29.98	30.01	30	35	23	Fair, generally bright
26	30.05	30.01	30.16	20	31	23.5	Fair and bright
27	30.23	30.28	30.29	26	33.5	24.5	Fair and bright
28	30.21	30.12	30.08	20	35	31	Fair, but cloudy
29	30.17	30.18	30.20	33.5	33	35	Fair, but cloudy
30	—	30.19	30.17	33	37	33	Fair, but cloudy
31	30.14	30.08	30.00	32.5	37	33	Fair, but cloudy

Summary.				Mornings. Noons. Nights.			
Highest temperature observed	...	...	...	... 43°	... 45°	... 43°	
Lowest ditto	...	...	...	... 20	... 31	... 21	
Mean ditto	...	...	...	... 33.5	... 35.5	... 33.6	
Mean of all observations	...	...	...	...	34.2		
Number of days on which rain fell	...	...	...	...	...	...	5
Number of fair days	...	...	...	...	...	...	26
Number of fair days bright	...	...	...	...	...	...	14
Number of fair days gloomy	...	...	...	...	...	...	12

Greatest atmospheric pressure, 30.22 inches on the 27th.
Least do do 29.30 „ on the 14th.
Rain, 1.65 inches

The Photographic News, May 9, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE WORK OF SIR G. AIRY AND MR. GLAISHER AT GREENWICH—DR. HENRY DRAPER'S RECENT RESULTS—LEGISLATORS AND THE ELECTRIC LIGHT.

The Work of Sir G. Airy and Mr. Glaisher at Greenwich.—

A valuable publication has recently emanated from the Royal Observatory at Greenwich. It is a "Reduction of Twenty Years' Photographic Records of the Barometer and Dry and Wet Bulb Thermometers," and "Twenty-Seven Years' Observations of the Earth Thermometers, made at the Royal Observatory at Greenwich." The work has been published under the direction of the Astronomer-Royal, but, as our readers are well aware, a very large section of the labour has been performed by the esteemed president of the Photographic Society, Mr. James Glaisher, F.R.S., whose name as a meteorologist is a household word. Mr. Glaisher, who has but recently severed his connection with the Royal Observatory at Greenwich, where for many years he was superintendent of the Magnetic and Meteorological Section, has never received fair credit for the long years of patient work he has performed in connection with weather knowledge. To say nothing of his perilous ascents into the clouds, repeated not once or twice, but several scores of times, in one of which he attained to a height more lofty than that of any other human being, while in another he was so favoured that he beheld the full breadth of England stretched map-like below him, from Lowestoft on the one hand to the coast of Wales on the other—to say nothing, we repeat, of the valuable records made at these extreme altitudes, Mr. Glaisher's scientific work in the region of meteorology is such as must secure the admiration of every thoughtful man. It is a pity, therefore, seeing that the work done in the "Reduction" in question, for so many years past, is to a great extent the fruits of Mr. Glaisher's labours, that the Astronomer-Royal did not put his colleague's name more prominently forward. Of course, a head of department, in full power, like the Astronomer-Royal, can do pretty well as he pleases, either in ignoring, or putting prominently forward, the work of those who are associated as colleagues or as assistants; but for the very reason that his power is so great, we expect from him, perhaps, a little more than justice might call for. Mr. Glaisher, as a meteorologist, stands second to none in this country, and it is very certain that the announcement of his name in connection with any report or statement at once causes the same to be revived with greater confidence. It is not so long since that Mr. Glaisher explained to the Photographic Society the various uses to which photography is now put as a recorder at the Royal Observatory, and the "Reduction" is an embodiment of results secured in the manner the President then described. At that time, about five years or six years ago, there were no means at Greenwich for the registration of astronomical phenomena, but only of those connected with the magnetical and meteorological observing instruments. The motions of the declination, horizontal force, and vertical force magnets are all registered by photography. The position that a declination magnet assumes is termed the magnet meridian, and to register any change that may take place, this is compared with another, the astronomical meridian. Optical observations were formerly made at Greenwich of these instruments, and the consequence was, that skilled watchers were necessary day and night to look after them; now all such dreary work is at an end, and the duties undertaken by a never-napping photographic apparatus. A mirror arrangement is employed, and a pencil of light is thrown by its means from the moving magnet upon sensitive paper. The sensitive paper is put upon a cylinder that slowly revolves, and the beam of light traces a line upon the paper, which is the more wavy the more frequent are the magnetic disturbances of the earth. A marker or pencil, at the end of the suspended magnet bar, would be open to the objection of seriously impeding the

action of the moving magnet; a tiny mirror to reflect light does not do this. The electric condition of the earth from time to time is also written down by photography, every electric pulsation being recorded, and, as we have already intimated, the reading of the barometer, as also of dry and wet bulb thermometers, are registered in the same manner. The sensitive paper employed at Greenwich for these records is prepared by a modification of the calotype process, the impress of the light not being strong enough for an ordinary chloride of silver, such as presented by albumenized paper sensitized after the usual fashion. When the cylinder supporting the paper has completely revolved, the paper is stripped and the image developed. The process answers its purpose tolerably well, no doubt, but, taking into consideration the strides made by photography during the past few years, we think the Royal Observatory at Greenwich would do well to consider whether it might not now be improved upon, and the records impressed with still more sharpness and delicacy.

Dr. Henry Draper's Recent Results.—It is announced that Dr. Henry Draper, of New York, whose photographic work in connection with the spectrum is so well known, intends to visit this country during the summer. Dr. Draper, it may be remembered, discovered about a year ago unmistakable evidence of oxygen in the sun, through the medium of the camera; and although at the time there was a good deal of cavilling over the proofs he adduced, they were far too convincing to be gainsaid. Dr. Draper's critics, however, have had one good effect: they have caused the investigator to study the subject still further, and the result is further photographs upon a much larger scale, that bear out all previous evidence. The lines are shown with even more clearness in this second series, and henceforth there can be no excuse at all for doubting Dr. Henry Draper's discovery. Possibly our learned societies may feel inclined, after the scepticism expressed, to make the *amende honorable* to Dr. Draper when he honours us with his presence.

Legislators and the Electric Light.—We can hardly see what good can come of the Parliamentary Committee on electric lighting. If the electric light is good, whether for the illumination of streets and squares, or for private dwellings, any number of members of Parliament are hardly likely to influence the result. It is of little use, surely, to call up experts, or rather those who imagine themselves to be such, and to ask them whether they consider Mr. Edison is likely to invent anything useful, or questions of a similar character; nor do we think the cataphorsing of inventors upon the advantages of their own machines is likely to prove much more than would the questioning of cobblers upon the merits of leather. The latter craftsmen could not be more eager to assure us that there was nothing like leather, than some of the gentlemen have spoken as to the merits of electric illumination. Dr. Siemens quotes an example—of which we should like to hear more, by the way—of a collision having been averted by the use of an electric light on board one of his own vessels. An approaching craft had neared to within a very short distance, and if it had not seen the electric light, and had been seen by those exhibiting the latter, there must have been a collision. The Board of Trade, he told the Committee, forbade the use of electric lights in ships under ordinary circumstances; but Dr. Siemens did not appear to know why. The reason is that ships shall not be mistaken for lighthouses, and the Board of Trade could, if desired, point to several instances in which collisions had actually occurred from such mistakes. Indeed, the incident to which Dr. Siemens himself refers may have been due to the circumstances of the approaching vessel imagining that the bright light on the Siemens' Ship was stationary, and not rapidly coming towards them. But, in any case, we can hardly see what good a Parliamentary Committee can do by examining persons more or less interested in inventions. If electric illumination is ever to be so improved as to come into general use in our houses or squares, the matter will not be brought about one moment sooner or later by the sitting of a committee of legislators of the country.

Correspondence.

COLOUR FOR INSIDE STUDIO.

DEAR SIR,—On reading the article intitled "A New Departure," in last week's *News*, I was strongly reminded of a somewhat strange experience I had some years ago, but which in the light of the new theory is no longer strange.

The studio I occupied at that time was coloured a dark bluish-grey or lead colour, which had the effect of making the place look very dark and gloomy, the room being large, with considerable wall space. To overcome this, I had it repainted, the woodwork of the skylight and side light being painted a pure white, the walls and all other woodwork a light sage green, the cornices and mouldings being a slightly different colour. The change had the effect of making the room look bright and cheerful, and at the same time easy and pleasant to the eye. Pictures taken in the room before the change were somewhat hard and wanting in detail in the shadows if the exposures were not very full indeed. My surprise was therefore very great, on commencing work, to find the exposure much shorter, and, in fact, the pictures in every way improved. It never occurred to me that the green could have anything to do with the change, as I had selected it in the belief that the light reflected from it would be the same in quantity and quality as from the grey. The only reason for the change I could think of was the sashes being painted white, and the glass cleaned. This could not have been the cause, as no special attention was afterwards paid to the windows, and still the same results continued to be obtained until I left the place, being compelled to do so from ill health. I feel so sure that the green was the cause of the improvement, that I intend to colour my present studio in the same manner at the earliest opportunity. When I have done so, I will report the result.—I remain, yours truly,

A. BORLAND.

RAPID DRY PLATES FOR THE STUDIO.

DEAR SIR,—I should like to say a word of encouragement to all photographers who contemplate working the rapid gelatino-bromide dry process in their studios, as I know many are in great doubt what they should do. I believe it to be the process of the immediate future, and all who have not yet contemplated making any change from the old style ought certainly to consider the matter carefully if they wish to keep ahead.

In the first place, making the plates is such a simple matter, that a boy of ordinary intelligence can turn out enough in a day or two for a week's large business, having been once shown the way, and I think it much better for photographers to prepare their own whenever possible, although it is very convenient to be able to purchase thoroughly reliable plates; but that is just the point. We used some dozens of commercial plates, obtaining but very few fairly successful negatives, before determining to prepare our own.

Having worked out a process from the beginning, improving and simplifying all details, from the emulsion making to the developing of the negative, we are now in possession of a system of work from which nothing would induce us to return to wet collodion. The cost is not one-fourth of the old process, and the results are infinitely superior. Head-rests are banished from the studio, as well as the photographic smell which hangs about whenever collodion is used. Exposures in the glass-room are from a quarter of a second to one or two seconds, and the negative is ready for fixing in about half a minute after applying the developer.

Half plates, whole plates, and 12 by 10 are our regular working sizes—15 by 12 and 20 by 16 often—and we have no more difficulty with the larger sizes than with the small, and are certain in all cases of securing negatives of the highest quality, and printing as quickly as collodion.

Collodion has been a good old servant, and I for one have a great respect for him still; but he will as surely have to go before the gelatino-bromide process as the Daguerreotype did before him, and as the old mail coaches before the locomotive.—I remain, dear sir, yours, &c.,

W. H. NELSON.
Twickenham S. W.

ON THE CONTINUATING ACTION OF LIGHT IN CARBON PRINTING.

BY E. W. FOXLEE.*

IN the early days of the carbon process operators were often surprised to find upon development that their prints were much darker than they anticipated, until at last it was noticed that the longer the prints were kept between exposure and development the darker they became. The first to direct public attention to this matter was, I think, Lieutenant Abney, who read a paper on the subject before the Photographic Society, in 1872, in which he proved that the action once set up by light continued in darkness. At that time, and since, several have denied that any such action takes place; but this I can only attribute to limited experience or want of perception, as it is almost impossible to work the carbon process to any extent without being convinced of it, especially during hot and damp weather.

At the June, 1877, meeting of the Photographic Society of Great Britain, Mr. J. R. Sawyer again brought the matter forward, and read an excellent paper which he illustrated with some well-chosen examples, which proved incontestably that, not only did this action exist, but that it proceeded much more rapidly when the insulated tissue was freely exposed to the air than when protected from its influence. Through the kindness of that gentleman I am enabled to exhibit those specimens this evening, and I cannot do better than read an extract from his paper which will explain them in much better language than I could employ, and will at the same time serve to introduce my own experiments in this direction. Mr. Sawyer says:—

"What I wished to call your attention more especially to this evening, is the change that gradually takes place after the exposure of sensitive tissue for a very brief space to the action of light. We will take for example (say) a negative which, with a given tissue, requires an exposure of six tints. If we take several pieces of this tissue, and expose them one after the other for a very brief period upon a negative—say for one tint—we shall have a series of pictures which would be considered very much under-exposed, and if we develop one of these soon after its exposure to the light, we find, of course, that it is very much under-exposed, and, as a picture, worthless. We find that it is only in the very deepest shadows we get any vigour; that the half-tones will not hold; that they wash away, and the whole is simply worthless.

"Now let us cut our other pieces into two portions, distinguishing them by a letter on one portion, as well as the numbers. No. 1 we have developed, and we know exactly what effect is produced by the brief exposure to light; having cut the other portions in halves, let us distinguish them as No. 2, 2A, 3, 3A, and so on. Put those pieces distinguished by a number into a tin case carefully sealed from the light, and, as far as possible, from the atmosphere; put these pieces distinguished by a number and a letter into (say) an ordinary drawer. We thus create separate conditions—one series being kept from the light, and to a considerable extent from the atmosphere; the other being kept from light, but in contact with the air, and consequently to a great extent influenced by changes of temperature of hygrometric conditions.

"To continue our experiment; let us day after day develop one of the exposed prints, of course developing

* Read before the South London Photographic Society.

together the halves that belong to each other, and the results will be eminently instructive. We shall find that day by day the action of the light will be continued—not an universal fogging and decomposition over the whole of the surface, but every gradation of light and shade preserving its proper balance, until at last a point is reached when the picture is as good as possible; that is to say, a photograph in pigmented tissue has been produced by allowing the light to act upon it for only one-sixth of the time supposed to be necessary, the remainder being due to the continuation of the light's action, when the picture is no longer under its direct influence. But it must not be forgotten that our pieces of exposed tissues have been kept under slightly different conditions, both protected from the action of the light, but only one specially protected from the action of the external air. The one protected from the action of both light and air reaches its proper gradation of light and shade much more slowly than the one protected from the light only, showing that other elements than that of the action of the light enter into the making of the picture. The examples that I commend to your notice this evening have been produced in the manner I have desired; the two halves of each picture have been joined together, and show in a marked manner the additional action conferred by the atmosphere not being perfectly excluded."

In *The British Journal Photographic Almanac* for the current year, I detailed the results of some experiments I had made, which prove that moisture plays a very important part in this so-called continuing action. The results of these and some others I propose to lay before you. I may as well here mention that all the experiments were made on tissue that had been sensitized in the manufacture. By this means equal sensitiveness throughout the piece is better secured than when the sensitizing is done afterwards. The negatives employed were six reproduced ones of the same subject, and of the same intensity. They are the negatives from which the frontispiece of the last edition of the *Autotype Manual* was printed. You will see by this sheet of prints that they are as equal in density as it is possible to obtain them, and are all well suited for experimental purposes.

On this set of negatives a sheet of tissue was placed, and then exposed to light, but for only half the time that would be required if the prints had been developed at once. It was then divided into six pieces, each a complete picture. One of these was developed for comparison, and you see that it is much under-printed. Two others were put into an air-tight case, the other three were also put into a similar case, but before this was done they were made thoroughly dry in a drying closet.

Twenty-four hours after exposure one of the prints that had not been dried was developed, and you see that it has gained very considerably in the exposure, being nearly, or quite, dark enough. Four days after exposure the second print from this case was developed, and it proved to be nearly insoluble; but by the use of hot water and long soaking a very much over-exposed print was obtained. After seven days one of the prints that had been dried was developed, and you see that no action has taken place, and that the print is no darker than that developed immediately after exposure. Twenty days after the second print from this case was developed with the same results. Sixty days after the last print was tried, and it proved to be nearly insoluble—rather more so than that developed on the fourth day, but by dint of long soaking in hot water a very much over-printed picture was coaxed out. This insolubility and darkening I attributed to the tissue having absorbed moisture when the case was opened to remove the previous prints, as it was much limper than when first put in. The next experiment confirms my opinion.

A sheet of tissue was then exposed on the six negatives as before, namely, for half the necessary time. One was

developed, and the other five put into the drying closet and allowed to remain until thoroughly dry, and then placed into the air-tight case. Fifty days after one of these prints was developed (care being taken in opening the case that the remaining prints did not absorb moisture), and it proved to have gained nothing by keeping. After the lapse of one hundred days another was developed with the same result; and at the end of one hundred and eighty days (six months), another was developed, and you will see that no action has taken place, nor has the tissue become any more insoluble than when freshly made, although kept for so long a time. The remaining two prints I still have in reserve.

These experiments prove conclusively to my mind that the continuing action of light is due to the presence of moisture in the tissue; and that, if it be removed, this action is totally arrested, and prints may be kept for many months between exposure and development without becoming any darker than when first printed.

My next experiments were to determine the effect of the addition of moisture to the tissue for the purpose of accelerating the continuing action, and I must say the results have somewhat surprised me. A sheet of tissue was exposed for half the time, as in the previous experiments, then divided as before, one print being developed at once, and the other five suspended in a chamber the atmosphere of which was kept moist, and at a temperature of 85° F. At the end of an hour a print was developed, and it proved to be over-printed. The others were developed at intervals of half-an-hour, and they all show a continued and regular darkening. That kept three hours it was impossible to develop, as the action had gone quite through the tissue, and the paper could not be stripped off. In the next experiment the exposure was reduced to one-sixth, and the prints kept under the same conditions as in the previous experiment. At the lapse of one hour a print proved, on development, to be nearly dark enough; at one hour and a-half, somewhat too dark; and the others, of course, *much* too dark. The last print of this series was kept four hours, and you will notice that, though so dark, there are some few points that are quite white, showing that the exposure was too short to allow the light to penetrate the densest part of the negative to start the action. It will thus be seen that there is a minimum time which is necessary to set up this action in the extreme high lights.

The next experiment was similar to the last, except that the exposure was one-fourth the requisite time, and the prints developed at intervals of half-an-hour. You will see that the one kept an hour is of the right depth. From this it will be seen that prints that have only received a quarter of the proper exposure will, if kept for an hour in a dark and moist atmosphere at a temperature of 85°, prove quite as good as if they had received the full exposure to light. The other prints are all too dark; in the last one the action had gone quite through the tissue.

The next experiment varied somewhat from the preceding ones, as the prints were kept moist in a different manner, and at a lower temperature. After the sheet of prints was divided, and the first developed, the others were mounted on transfer paper; but, instead of plain water, a seven per cent. solution of bichromate of potash was used, and the mounted prints kept at a temperature of 55° F., one being developed at the end of each hour. You will see that a regular darkening has taken place, but much more slowly than before, four hours being required to bring about the same result as was produced in one in the previous experiments. In a similar experiment, when the mounted prints were kept at a temperature of 65° F., two hours sufficed to produce a fully-printed picture. The reason for using bichromate of potash solution is that the presence of the chromium salt is necessary to produce the effect, and if water had been used instead, the major part of it would have been removed.

NOTES OF COMPARATIVE EXPERIMENTS WITH GELATINE EMULSIONS.

BY H. J. PALMER, M.A.*

THE subject of gelatine emulsions is so well worn by this time that an apology seems to be due for its re-introduction by me to-night. There are, however, still some matters connected with this process which yet require elucidation, and among them that which I propose to discuss this evening. I mean the comparative characteristics of emulsions prepared by the various formulæ which have been from time to time advocated by the chief writers and workers of gelatino-bromide.

Early in the present year I set myself to work to conduct a series of experiments upon a number of emulsions, which might be considered to be fairly representative of the numerous candidates for photographic favour in this process, and I chose for my purpose the formulæ suggested by Messrs. King, Bennett, Wratten, and myself. I have tabulated these below, as follows:—

1. King.	Gelatine ...	... 16 grains
	Bromide potass ...	... 16 "
	Silver ...	... 22 "
2. Bennett.	Gelatine ...	... 20 grains
	Bromide ammonia...	... 7 "
	Silver ...	... 11 "
3. Wratten.	Gelatine ...	... 18 grains
	Bromide ammonia...	... 9 "
	Silver ...	... 15 "
4. Palmer.	Gelatine ...	... 20 grains
	Bromide ammonia...	... 10 "
	Silver ...	... 20 "

These proportions represent the necessary constituents of one ounce of emulsion, and in the preparation the utmost care was employed to secure an exact and accurate composition in each case. I procured, further, some of Kennett's pellicle, and mixed with it an emulsion with water, and also one with beer, in proportion of one drachm to the ounce. My first batch of emulsions were allowed to digest after mixture for twelve hours. I placed them together upon a sheet of iron over a gas jet, at about eight p.m. The gas was turned low, and regulated to maintain a temperature, as I thought, of 90°. I unfortunately omitted to make allowance for the fact that at about 10.30 p.m. in my house a large number of burners would be turned off, and in consequence that the flame in my dark room would be considerably increased in its size. In the morning I found all the emulsions much too hot, and three of them with red fog hopelessly evident. The "King" emulsion, however, remained unimpaired and creamy in its colour, and plates prepared with it were in all respects satisfactory.

The four emulsions were once more concocted with the utmost care; digestion for twelve hours was effected on the bottom shelf of the drying cupboard, the gas under the iron cone having been lighted, and the temperature thus sustained at a moderate point. These emulsions were all satisfactory; and, after the requisite washing, plates were coated with each and left in the cupboard to dry. Very damp and muggy weather supervened, and more than five days elapsed before desiccation was complete, and now another of our tormentors manifested its presence in the shape of blistering films, induced, doubtless, by decomposition. The evil pervaded the "King" plates least, and the "Palmer" plates most of all, and in the "King" plates alone were the usual remedies sufficient to put a stop to the nuisance. The third batch of emulsions was allowed twenty-four hours' grace for the emulsifying process. Washing was effected as usual; twelve plates were prepared from each emulsion, and twelve also from an emulsion composed of equal parts of the four. I coated also some plates with each of the two kinds of Kennett pellicle emulsion, and, as the weather was dry and fine, the whole batch was ready for use in twenty-four hours. In appearance of the films the "King" plates were the creamiest and densest: those prepared with emulsion No. 4

were the thinnest of all, while Nos. 2 and 3 were about equal in density.

So far, then, I consider that the "King" emulsion took precedence of the other three—(1) in being less susceptible of red fog; (2) in suffering less from the effects of decomposition; (3) in presenting a denser film, and, in consequence, being presumably less liable to halation.

I now placed plates prepared from each description of emulsion in the dark slides, and added others of Kennett's pellicle (both water and beer), Swan's rapid, and both the ordinary and rapid plates made by Messrs. Wratten and Wainwright. All were next exposed upon the same subject, under precisely similar conditions of light, lens, and diaphragm. Each negative received upon one of four sections exposures of five, ten, fifteen, and twenty seconds respectively in a bright light, without sun, and with stop 3 of Dallmeyer's quarter-plate rapid rectilinear. On development the "Palmer" and mixture films were the only plates to show signs of blistering, but the evil was readily cured by the use of the usual remedy. I now tested their receptiveness of density under acid pyro and silver by intensifying one-half of each film. The results are as follows:—

	Requisite Exposure Seconds.	Density	Intensification	Latitude
1. King	15	Third class	Second class	Second
2. Bennett	5	Third "	Second "	Second
3. Wratten	10	Third "	Second "	Second
4. Palmer ...	30	Second "	First "	Second
5. Mixture	15	Third "	Second "	Second
6. Kennett's pellicle ...	10	Third "	Second "	Second
7. Ditto with beer	20	First "	First "	First
8. Swan	5	Fourth "	Third "	Third
9. London rapid	2½	Fourth "	Third "	Third
10. Ditto ordinary ...	10	Third "	Second "	Second

In rapidity, then, I found the London rapid first; the Swan and Bennett second; Wratten, Kennett's pellicle, and London ordinary, third; King, and mixture, fourth; Kennett-beer, fifth; and Palmer, last. In density and general brilliancy the Kennett-beer were far the best, and the rapid plates the worst. The earliest to take intensification were the Kennett-beer; the most averse to it the Swan and London rapid. The Kennett pellicle plates gave the greatest latitude of exposure, and the rapid plates the least.

The above classification may, I think, fairly represent results likely to be attained with each of these various kinds of gelatine plates in the hands of an amateur of average skill and experience. It confirms the opinion I have always held, that for ordinary landscape work the most reliable emulsions are those which are slow in character; that the addition of beer gives density, brilliancy, and latitude, without unduly prolonging the necessary exposure; and that for portraiture and subjects on the move, the rapid plates of Messrs. Swan and Wratten are invaluable.

With regard to the difficulty of intensification of the rapid plates above mentioned, it is only fair to add that they were developed with ferrous oxalate, while the rest were treated with the usual alkaline pyro. In my own experience the only method of redevelopment after ferrous oxalate is by the use of chloride of copper to bleach the film, and then by applying acid pyro repeatedly before adding the necessary quantity of silver, care being taken to wash very thoroughly at each step in the process.

A weak solution of iodine and iodide of potassium has been recommended for use, preliminary to intensification, as the best means of facilitating the process where plates are not readily susceptible of it. The accompanying negative was treated with a wash of iodine over one-half of its surface, and then the whole was intensified with acid silver. Density has gathered to a greater extent upon the portion untouched by the iodine, and the latter has caused an unpleasant stain in the film.

I trust that these notes may be of use to those who are proposing to try gelatino-bromide during the coming season. That "comparisons are odious" in things personal I readily

* Read before the Liverpool Amateur Photographic Association.

admit; but there are matters in which they are not invidious, but useful and salutary. I trust that you will agree with me in thinking that this is so in the case of gelatino-bromide emulsions.

PHOTO-MECHANICAL PRINTING.

GELATINE RELIEFS.*

THE value of any given product must needs depend primarily upon two conditions, namely, first, its adaptability to its special purpose; and second, upon its cost—that is, the expenditure of time and labour in producing its ultimate results. Applying this principle to the estimation of photo-mechanical processes, an analysis of their relative value will be easy. Such an analysis will be found to divide the subject into two heads, the first relating to the æsthetic nature of the result, and the second to its practical utility. The higher problem which offers itself for solution in this, even more than in other departments of industry, is the combining of the two qualities in the greatest possible degree. Thus the method of producing the silver photograph possesses a higher æsthetic value, while the means employed in producing a printing-press impression have a greater practical one. The problem is to unite the two qualities.

In considering the results attained in utilizing the various graphic processes which come within the province of our subject-matter, it must not be forgotten that the one purpose above alluded to, the combining of the æsthetic with the practical—in other words, of quality with cheapness—was the main object in view. And, in so much as quality, after all, is the greater element of value, so the efforts of investigators were primarily directed toward the improvement of results in this direction. The object has been the attainment, first, of the qualitative result, and secondarily, the quantitative. When the means for producing the Daguerreotype picture had been developed to the greatest possible degree first in the quality of the result, and then in the rapidity and cheapness of its production, attention was directed into other channels, and the method was presently supplanted by others employing the photo-sensitive silver salts, and these again, having reached a high degree of perfection, are supplemented by the use of chromic compounds, in one direction toward the attainment of greater durability and perfection, and in another direction toward more extended utility and cheapness.

In the matter of pictorial illustration, means were demanded for more rapid and cheaper methods than were formerly in vogue, and though in the matter of quality the popular taste and capacity of appreciation requires to be educated, it itself has supplied the stimulus in the matter of quantity. And though the constantly increasing excellence of the results has, perhaps, not been greater than popular taste has demanded, it may be said to have fully kept pace with that demand. The most rapid and cheapest means of multiplying pictorial illustrations is that of the ordinary printing-press. For this purpose it is necessary that the plate from which the impressions are to be multiplied should hold the design in the form of a matrix—that is to say, in relief—all other methods proving slower and more expensive. The one great problem offered for solution to the workers in this field has thus been to provide means by which the highest possible quality of the result could be combined with the greatest facility in its production. The result, so far as it is developed up to the present time, is what is known as the photo-relief plate, obtained in some one of various ways on a chrome-gelatine film.

The various etching methods did not afford an adequate solution of the problem which had been raised, and the latest phase of the subject is marked by renewed attention to the qualities and possibilities of the chrome-gelatine compound. Among the earliest followers of Preuss were Tessie du Motay and Courtenay, both of whom made use of the swelled gelatine film. The latter obtained a patent for a process consisting of making the exposure as usual on a chrome-gelatine film, soaking the latter in water until all

the bichromate had been washed out. The plate is then flowed with a solution of iron or pyrogallie acid, in which state it was used as a matrix upon which to obtain an electrotype deposit. An improvement upon this method was patented by Levy and Baehrach in 1875, and is known as the Levytype. This process consists essentially of soaking the exposed chrome-gelatine plate, after wetting or partially swelling it in water, in a solution of nitrate of silver, which combines with the bichromate of potash in the film to form a bichromate of silver. The formation of this latter compound leaves the sunken line of the matrix sharp and defined, at the same time that the swelling of the film raises the groundwork to a sufficient degree. From this, electrotype casts may be obtained directly on the film, or plastic casts made from it, from which in turn stereotype plates can be obtained. In the former case, the swollen film, now consisting of bichromate of silver, is reduced into the form of a deposit of metallic silver by means of a bath of acidified solution of sulphate of iron. This reaction is allowed to proceed until all the bichromate of silver on the film is reduced to the metallic state. It is then treated with a solution of sulphuret of potash, which changes the deposit into the sulphuret of silver, and this covering is sufficiently electrolytic to receive the battery deposit. If a stereotype plate is required, the film of bichromate of silver is treated with a solution of the subsulphate of iron, and the plaster cast then taken in the usual way. The first plaster cast being, of course, in relief, a second cast is then made from the first. This second cast has the lines sunken, like the original gelatine plate, and forms the matrix into which the type-metal is cast, thus yielding a stereotype plate in which the lines are raised and the ground sunken. In all cases of the gelatine relief, the ground is sunk to but a slight and, in all the wider spaces, an insufficient depth below the surface. To deepen these spaces sufficiently to prevent them from inking in the press, mechanical means, such as "routing" machinery, are employed.

The reader will not fail to have taken cognizance of the essential difference between the various "lichtdruck" or half-tone processes and those whose results are to be utilized in the ordinary printing-press. In the former the various degrees of light and shade are brought about by a homogeneous mass of tone or colour, almost or entirely transparent in the high lights of the picture, and increasing in depth of tone until it reaches the full opacity of the deepest shadows. In a printing-press impression, however, there is no difference in the tone or colour in one part of the impression as against another part. The same ink, and to a like amount, is present over the whole print. The effects of light, shade, and shadow are produced by lines of various degrees of fineness or proximity. To obtain a plate consisting of lines forming a design, on a gelatine film, the latter must first be impressed by light through screen or negative containing the design. Such a negative cannot be produced by direct photography from the object itself, as a natural negative has the lights and shades in half-tone. It must be produced from a picture or design which is itself composed of lines so disposed as to produce the effect desired.

It thus becomes apparent that the production of a photo-relief plate requires a drawing or other design in lines or stipples, from which the transparent glass negative can then be made. Through this negative the light is allowed to act upon the gelatine plate, and the work then carried through its subsequent stages. The necessity of the original being in the form of lines being thus stated, it becomes at once manifest that the quality of the result depends primarily upon the draughtsman. The nature of the work required of the artist in this case is, in many senses, peculiar, and hitherto the supply of draughtsmen capable of executing such drawings acceptably has not been equal to the demand. The deficiency, however, is being rapidly supplied, and the constantly-increasing range of utility to which the photo-mechanical arts are attaining opens wide a new and promising field for industrial and artistic labour.

* Condensed from the *Polytechnic Review*.

The Photographic News.

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PHOTO-COLLOGRAPHIC PRINTING—THE "ARTOTYPE PROCESS."

WE have before us a marvellously fine example of photo-collographic printing, the work of the Autotype Company. It is the presentation print of the Photographic Society of Great Britain, printed from a negative by the Military School of Engineering, stationed at Chatham, the scene being in the river at Bettws-y-Coed, N. Wales. As a rule, portraiture is considered the most crucial test of the excellence of a process; but it has often appeared to us that landscape—especially some landscapes—more readily revealed the shortcomings of a photo-mechanical printing process than even portraiture. A view like that before us, consisting of masses of foliage and rocky boulders, would very surely show any defects in the printing process. The results here are scarcely at first distinguishable from silver printing, such difference as may be detected on careful examination really being, we think, in favour of the mechanical print. As a presentation print, this is worthy of the Society, and the selection is based on a right principle, as presumably illustrating the present standard of photography. The negative is that of one of the prize pictures at the last exhibition, and the printing is by one of the most recent and perfect photo-mechanical processes.

It is somewhat a curious circumstance that photo-mechanical printing generally has made less progress in England than in other parts of the world. The Woodbury process, it is true, is not only better done in England than elsewhere; here its results seem to be absolutely perfect, whilst in America it has proved a failure. Photo-collographic processes, especially, have not taken kindly root in this country, or proved, generally, commercially successful. In continental Europe they have, on the other hand, made great progress, and have, so far as we learn, been commercially successful. In America, very curiously, they seem to have remained for a long period dormant; but have recently made a leap into excellence and popularity. The introduction of a method of photo-collographic printing, named *Artotype*, and the establishment of a company for teaching the process and selling the licences, have given a sudden impetus to, and interest in, this mode of mechanical printing. But these things would have effected comparatively nothing if the subject of the propaganda had not been transcendently fine. If the process itself—or, rather, its results—had not been marvellously superior to the general run of photo-collotype prints, the most skilful and earnest propagandism would have availed little. The process is introduced to Americans by one of the most skilful and successful of agents, or, to use an unfairly disparaging term in vogue in the States—"process mongers"—Mr. T. Sarony Lambert. Such an agent will take care that the public know

all the merits of the process he has to introduce; and for a perfect success amongst American photographers these merits must really exist and be very tangible. We learn from the American journals that it has been taken up by a large number of the profession, who, having worked it, speak in high terms of it. Indeed, the most curious part of the business is, that many are apparently adopting it for the ordinary production of portraits. If this can be done, a degree of facility in working it is implied which does not usually pertain to photo-mechanical processes. We have seen examples of the process, sent from various sources, and we have recently received a parcel of miscellaneous examples from the Company. We prefer to avoid comparisons as far as possible; but we cannot accurately describe these without saying that they are beyond a question the finest photo-mechanical prints we have seen, and that they surpass the majority of silver prints, both in delicacy, richness, and force. When, added to this, it is remembered that they are printed in printers' ink, and have consequently the same permanency as an engraving, it will not be surprising that the enterprising photographers of the United States have so largely adopted the process, even in the teeth of a degree of opposition which to lookers-on must be as surprising as it is amusing.

The "Artotype" process owes its invention to Europe. It is, we understand, the most recent and improved form of collographic printing patented by Herr Obernetter, of Munich. So far as we know, it has not been patented or introduced in any form into this country. Especial importance is attached by the advocates of the process to the improvements which Herr Obernetter has effected. We have repeatedly given the various formulæ hitherto in use in preparing photo-collographic prints. We now subjoin, for the benefit of our readers who are familiar with photo-collographic printing, or who may wish to try it, the modified formula of Herr Obernetter, to which, presumably, much of the rare excellence we have described is due. Here are the details:—

"Coat any transparent or non-transparent surface with—

1st Solution.				
Water-glass	...	...	...	3 parts
Water	...	...	...	8 "
Albumen	...	...	...	7 "

"Allow the plates to dry in a rack; then place in the oven and coat with the—

Sensitizer.				
Gelatine	...	...	...	50 grams
Fish glue	...	...	...	50 "
Water	...	...	...	1000 "
Bichromate of ammonia	...	...	...	15 "
Chloride of calcium	...	...	...	none
Alcohol	...	...	...	none

The mode of printing has been often described in our pages, and need not be repeated now. To secure success, great care and some skill are undoubtedly necessary, as the printing process demands similar skill to that of a lithographic printer. Should such a process ever come into general use amongst portraitists we think it is probable that the printing would be best effected by professional printers who have acquired skill by experience, who might with advantage devote themselves to working for the profession.

FRENCH CORRESPONDENCE.

MEETING OF THE PHOTOGRAPHIC SOCIETY OF FRANCE—COURSE OF LECTURES ON PHOTOGRAPHY—TRAVELLING PHOTOGRAPHIC APPARATUS—NEW PROCESS OF PHOTO-COLLOTYPE—ACTION OF COLOURED LIGHT ON STAINED BROMIDE FILMS—COLLODIO AND GELATINO-BROMIDE EMULSIONS.

Meeting of the Photographic Society of France.—At the last meeting of the Society, held on the 2nd of May last,

a great deal of business was got through. I shall endeavour to give as full an account of this meeting as I possibly can within the limits of the space allowed for my letter.

Course of Lectures on Photography.—In opening the meeting, the President of the Society, M. Peligot, announced that, by an arrangement entered into between M. Milne-Edwards, Dean of the Faculty of Science at Paris, and M. Davanne, the latter had agreed to give in one of the halls of the Sorbonne a course of a dozen lectures on photography; these lectures would be given probably on Thursday evenings, commencing in the month of November next. The movement of the popularisation of the science of photography, of which I felicitate myself on being one of the principal promoters in France, is thus being extended. A course of the same kind has been already established at Brussels under the charge of M. Léonce Rommelaere; a programme of it has been forwarded to M. Davanne by M. Peligot.

Travelling Photographic Apparatus.—M. Klouzard exhibited to the meeting a portable camera and stand of his own construction, in which he has effected considerable improvements. I shall not attempt to give a description of this instrument, but content myself by saying that it exhibits a combination of convenience, simplicity, and lightness, and possesses all the advantages that can be desired by tourists. The camera shown at the meeting is constructed to take plates of about 15 by 21 centimetres.

New Process of Phototypie.—A new process for taking photo-collotypes was described by M. Leon Vidal. This process is quite different from the one now in use, and, according to the author, will render this kind of photographic printing much easier and better adapted for manufacturing purposes. The printing surface is obtained separately, precisely as an ordinary carbon print on a glass plate finely polished, and previously coated with some fatty substance to facilitate the subsequent removal of the image. When the image is completely developed, so as to show the faintest half-tones, a mould in the shape of a frame bevelled on the inside, and of exactly the same size as the phototype plate is intended to be, is placed on the glass plate, and a solution of which the composition is as follows is poured into it:—

Water	...	...	100 cub. cents.
Gelatine (ordinary tough)...	20	grammes	
Glycerine	...	40	"
Gum-arabic	...	20	"
Ammonia alum	...	0.5	"
Salicylic acid	...	2	"

Alum is added to make the composition hard and capable of resisting mechanical pressure, and the salicylic acid acts as a preservative. This mixture is poured on the carbon print, and fills the interior of the frame by which it is moulded, so as to have a reversed bevel. The layer of composition then forms a plate with a hygroscopic surface, or, in fact, an artificial lithographic stone bearing a transfer of the carbon print, which then forms the image, from which an impression can be taken. When completely freed from any excess of water, the cake of composition must be from five to six millimetres thick, and this serves as a guide to the thickness which the mould must have to contain it. This plate is then placed in the chloride of calcium box, when, at the end of one or two days, according to the season, it will become dried to the required extent. Lastly, the whole layer is stripped off the glass plate and mounted on a copper plate, which must itself be raised on a wooden support, so as to bring it up to the height of the type with which it is used. Thus we have a collotype plate which can be inserted in the text of a work, and which will give a large number of prints without requiring fresh wetting, provided only sufficient moisture has been added to saturate it before going to press. By this arrangement we are able to treat separately, on the one hand the printing image, and on the other

the hygroscopic surface on artificial lithographic stone, and this permits us to give to each of these essential parts the special properties which it ought to possess. The one must be before all things ready to absorb fatty substances, and the other to repel them completely. According to the author of the communication, the method that he describes is the only one by which photographic prints in fatty ink can be pulled simultaneously with type. It must be borne in mind, too, that these pictures have the graduated and modelled half-tones of negatives taken from nature; by every other process we can obtain only metallic plates in which these gradations are produced by hatching or stippling, thus rendering rather an interpretation than a faithful copy of natural objects. M. Vidal confined himself to giving merely a descriptive outline of his new process, and proposes on some future occasion, and in another place, to enter more at length into the details, and to point out the various applications which the process admits of. When it is well known it will, in his opinion, have the effect of stimulating considerably the extension of collotype printing. Prints of this kind have hitherto had a very limited production, because, although delicate and refined, they are not very constant in quality, unless executed by a very skilful operator: by the new process, on the other hand, collotype plates can be produced and worked on a large scale, and every printing or lithographic establishment will soon obtain workmen sufficiently trained to carry it out. M. Vidal more particularly drew the attention of his audience to the special character of the printing image; it exists, in fact, on the layer of gelatine in relief, which relief can be varied according to need; while in the collotype plates hitherto used, the image is depressed or engraved. This is a great advantage, which will be appreciated by all who work this kind of printing.

The Action of Coloured Light on Stained Bromide Films.—As regards the other proceedings of the meeting, they were devoted almost entirely to the burning question of the day—collodio and gelatino-bromide emulsions. But before giving an account of the various communications on this subject, I had better give a short abstract of a paper read at the meeting by M. Cros, on the means of modifying the chemical action of light on sensitized plates according to the way in which they are prepared in relation to the effect desired to be obtained. This paper was a resumé of one which, under the title of "On the Action of Differently Coloured Light on a Film of Silver Bromide impregnated with Various Organic Colouring Bodies," he had already submitted to the Academy of Sciences. His object is to be able to reproduce natural objects in similar tints to those obtained by the artist *en grisaille*; that is to say, with the true effects of light and shade as seen in nature, and avoiding those of the red and yellow, which to the eye are luminous, but in photographs are rendered by black shadows. It is, in fact, the whole question to which I have so often directed the attention of experimenters—that of obtaining a negative in which the different colours preserve their proportional value. M. Cros shows in his communication that a collodion containing three per cent. of cadmium bromide, and sensitised in a twenty per cent. bath of silver nitrate, will give a sensitive film capable of realizing the required conditions. The film must be carefully washed, and, to remove all trace of silver nitrate, it must be rinsed in a three per cent. solution of potassium bromide, and then again well washed to get rid completely of any remains of the latter salt. When thus treated, the film is quite free from soluble salts; it may contain some very delicate organic bodies, but, in the absence of light, these will not be the cause of disturbing action. On a film prepared in this way Mr. Cros forms an alcoholic solution of turmeric, either alone or mixed with a tincture of carmine; he then washes it to remove the alcohol until all greasy marks disappear. When exposing, which is done in the ordinary way, he

interposes between the object and the lens a flat cell containing a solution of potassium bichromate, thus permitting only orange-coloured light to enter the camera. In this way M. Crocs has succeeded in photographing the red and even the ultra red of the spectrum, and as the action of the violet and blue rays is suppressed, he produces a grey-tinted negative with the same effect of colour as seen by the eye. In a similar way, with a tincture of chlorophyll, the chemical action can be reversed, and the red of the spectrum obtained to the exclusion of the violet; when, therefore, we have succeeded in completely reversing the spectrum, we can, by a proper use of the modifying substances, direct the chemical action so as to produce the desired effect. These theoretical views no doubt are as yet wanting in practical conclusions, but they open a path for investigation at the goal of which will certainly be found the solution of the important problem how to obtain a negative with the effects of the different colours in their proper relative proportions.

Collodio and Gelatino-bromide Emulsions.—I now come to the subject which occupied the greater part of the time of the meeting—emulsions both of collodio and of gelatino-bromide. The subject was opened by a letter of M. Fabre, of Toulouse, in which he called the attention of the Society to one of the results of his researches—the fact, namely, that the collodio-bromide emulsion of M. Chardon is not so efficient when old as when it is recently prepared; it is necessary, he found, to let it dry before washing it. M. de Lafolaye also, through the medium of M. Davanne, described an experiment he had made in preparing emulsions by a different method to that given by M. Chardon; he had found it preferable to precipitate the silver bromide from water, to wash it with alcohol, and then to incorporate it with the collodion. A negative taken with emulsion prepared in this way by M. Lafolaye shows very great delicacy. M. Andra had tried the same method, and had obtained similar results. M. Dardy wished to know whether the same method could be adopted for the preparation of gelatino-bromide, and showed some of his own attempts in this direction, which, however, scarcely appeared to be conclusive. M. Stebbing believed that it would not answer for gelatine. M. Aimé Girard remarked that some means of effecting the object in question would no doubt be discovered; he thought that probably it might be found by obtaining perfectly neutral silver bromide in a highly subdivided state, and he recalled his often proved chemical experience of the impossibility of passing any bromide or chloride through the filter so long as the least trace of acidity had not been removed by washing; so soon as that disappeared the bromide escaped through the filter. The required condition must probably be sought for in this direction, as perhaps M. de Lafolaye himself had already discovered. M. Stebbing, and after him M. Dardy, exhibited enlargements of gelatino-bromide negatives formed on the exterior surface of the gelatine film which had been separated from the plate. M. Stebbing had obtained a very fine and regular negative, with all the lines correct, enlarged about four times, and transferred to a plate four times as large as the first. M. Dardy has been equally successful. The latter advantage is for the moment a defect which must be, if possible, avoided; it is manifested in some kinds of gelatines, and more particularly in the one with the comet brand. According to M. Dardy the frilling is due to too concentrated a developing or fixing solution; he had been able to correct it directly he observed the defect by reducing the proportion of ammonia and that of hyposulphite, or, in other words, rendering the developing solution less alkaline, and those of either iron oxalate or sodium hyposulphite less concentrated. M. Stebbing showed a series of plates whose delicacy had in no way interfered either with their vigour or their harmony; he stated that he had not experienced the least difficulty in attaining any degree of intensity. As regards their sensitiveness, it was so great that the greater part of the views which he

exhibited contained, as he pointed out, living objects taken while in motion. A non-actinic light is in M. Stebbing's opinion very difficult to attain; he showed some experiments he had made on this subject, all conclusive in favour of chrysoidin, three layers thicknesses of which must be superposed on one another to remove all effective actinism. M. Franek de Villecholle recommended the employment of every possible precaution against the action of the chemical rays—more even in the case of the preparation than in that of the development of gelatino-bromide; he himself uses a pane of glass coated inside and out with collodion stained with chrysoidin. M. Gobert advised operators to keep the film of gelatino-bromide excessively thin; too thick a film is, as he observed, often the principal cause of imperfections. A remarkable collection of negatives in gelatino-bromide was exhibited by M. Morizet; they had only had an exposure of from two to three seconds. M. Balagny showed some beautiful negatives taken on collodion emulsions, and pointed out that he had secured the very complete uniformity which characterised them by employing the method of Mr. Bolton; this consists in pouring the emulsion into a dish, letting it dry, cutting it into strips, and then washing it in boiling water. He guarantees, if this method be used, an absolute constancy of result. Unfortunately, this emulsion requires an exposure of fifteen minutes, where one of gelatino-bromide only takes a few seconds, and excellent as are the negatives which M. Balagny obtains by his method, the words "fifteen minutes" are apt to make us lose temper; it is the speed of the waggon against that of the locomotive. However that may be, we are compelled sometimes to make use of the waggon in spite of the railways, and it is the same with these collodion emulsions—we must not despise them altogether. M. Ferrier submitted to the meeting some excellent specimens of gelatino-bromide pellicle of his own make, and some negatives taken with it. Pellicle is now an indispensable requisite of all travelling photographers. Lastly, M. Chardon read an important paper on the various gelatino-bromides; but it was too long for me to attempt to give even an abstract of it—my letter for this week's News would never be finished within anything short of outrageous limits, and with all my wish to be as concise as possible, I have already exceeded the space that is generally allotted to me. Nevertheless, the Editor and my readers will, I hope, permit me to say a few words about M. Chardon's paper, which constituted in reality a most complete and interesting study of the whole subject of gelatino-bromide. He has tried a very large number of the gelatines generally known, and he has succeeded in giving us a series of formulæ which I shall describe afterwards, but of which the principal is as follows:—

A.—Water	...	...	50 cub. cents.
Ammonium bromide	...	...	5 grammes
Nelson's gelatine	...	...	4 "
Fish glue	...	...	4 "
B.—Water	...	...	50 cub. cents.
Silver nitrate	...	...	9 grammes

B is poured into A, and the whole is kept for three hours over the water bath with frequent stirring. The result is a creamy emulsion, which is filtered into a dish, and, when set, it is cut up and well washed, so as to free it from all soluble salts; the plates must be dried very rapidly. I shall recur to this paper (which has been very conscientiously worked out) on a future occasion; it is important that at least a *resume* of its principal details should be made public. I cannot conclude without referring very briefly to the remarkable collection of photographic prints on lithographic stone, taken with fatty ink, by M. Lamué.

When I commenced an account of this meeting, I alluded to the well-filled agenda paper; in giving only a condensed summary of the transactions, I have made the present letter much too long.

LEON VIDAL.

LIGHTING THE SITTER.

BY O. W. OSBORN.*

IN what follows, I shall attempt to confine myself to a few remarks upon the proper lighting of the sitter, hoping by so doing to perhaps throw a faint ray on the subject, which may (or at least I hope so) do some one a small amount of good. What is the cause of our pleasure when viewing a really fine work of art? To this there is but one answer, namely, the lighting and posing: but as it is the former of which I am speaking, I shall leave the subject of posing for the present. Pick up any well executed photograph, which has been made by an *artist*, and you will observe a wonderful blending of light and shade, without any of those harsh, snowy lights and inky blacks so characteristic of many pictures made in the rural districts. A great many workmen in the country are in the habit of treating all their sitters alike in respect to the lighting, forgetting, as it were, that no two faces require exactly the same treatment. While a light may be well suited to your purpose in photographing persons with round, plump features, yet that light would give you a horrible negative of a person with very prominent features. For a person with round, plump face, the light (that is, the principal light) should strike them at an angle of about 45° from the perpendicular, and proceed from some distance in front and to one side of the subject. A serious fault with many is in the use of a screen on the shaded side of their subject. The screen is all right if it is only used in its right place, which, I may say, is not wholly to one side, but rather inclined to occupy a position more in front of the sitter than many are inclined to place it. Of course the inclination must depend altogether upon the subject you have in charge: if fat and plump, pull the screen away some distance; but if of the opposite sort, move it closer up, all the while watching the various changes and modifications that take place. Care must be exercised, so as not to throw too much light on what should be the shady side of your subject, for if you do, you will meet with a serious trouble in respect to the formation of false lights.

A common fault of many is in placing their sitters too close to the side light, thinking that by so doing they gain increased brilliancy and shortness of exposure: better have no side light, than so sin against all the rules of art by so doing. Brilliancy is not produced by any such means, unless you call hardness brilliancy. In order to secure brilliant lighting, it is essential that your background be of a medium grey tint; not too dark, for that gives a cold, wintry effect, and the light strikes the sitter so that one side is made a little lighter than the ground, while the other is so screened as to be made to appear a little darker; taking care to watch the gradations of light and shade on the face, that they be not too abrupt; to prevent which, use the white muslin screen or reflector mentioned above, and in the manner there indicated. Light proceeding from a number of places, as from too large an opening in the sky or side-light, will have a very bad effect. It not only flattens the picture, but gives the person making the same a very bad reputation as an artist; so see to it that a suitable number of screens are provided, both over head and on the side, to enable you to control your light in a satisfactory manner.

During my fourteen years' experience, I have worked under a great many different lights, some of which were very good, while others were fit subjects for ridicule. Of course, one workman will prefer this, and another that, sort of light; but, for my own part, I find one constructed with a clear northern exposure the very best that can possibly be made. The side light should be about seven or eight feet high by twelve or fourteen feet long, with screens provided with springs or weighted rollers, so that they can be raised from the bottom up, and not the reverse, as

is the method adopted in a great many studios. Skylights should face the north, if possible, and be about twelve feet wide, and as long as the side light, or a little longer would do no harm, and also be provided with light blue or white screens, fastened at their upper ends, and provided with cords and pulleys, so that they can, at the will of the operator, be made to perform all the functions required of such devices.

By having the screen fastened at the highest point of the skylight, and the lowest part of the side-light, you will be better able to control the lights and shadows on the faces of your sitters than if the arrangement was reversed, and the ends made fast, as I have frequently seen, at the point where the side and top-lights join. The operating-room should always be provided with two white muslin screens, for use on each side, but more nearly in front of the sitter. They should form, as it were, a pair of wings to the instrument, thus enabling the operator to vary the effect at will. A very useful contrivance, embodying the same principles, is the Kurts counter reflector, which you can find described at length in Anderson's "Skylight and Dark-room." Of course, an arrangement of the kind just mentioned is only suited to bust pictures or the like; groups always requiring a different treatment.

The other subjects connected with the photographic business, of which the writer would like to speak, will be treated separately under their appropriate heads.

One more thing, connected with the arrangements of the skylight, deserves mention. It is the habit of many photographers to build their lights entirely too flat; or, in other words, not high enough from the floor to the highest point. The skylight should always have what carpenters call a "half pitch," or even a little more than that would not hurt anything, but be more beneficial than otherwise. I need not here attempt to enumerate the many advantages a steep light may have over a flat one; suffice it to say, that your operating room will be drier on wet days than your neighbour's who has a flat light. Where the skylight is steep, as indicated above, and you have to operate in a room fifteen or sixteen feet wide, you will find that much better results will be obtained by placing the sitter seven or eight feet away from the side-light, thus giving the lower portion of the skylight a chance to assist in illuminating the model, not to add a hundred other advantages to be derived when a steep light is used; but the most important of all will be the relief obtained, which is mainly due to the direction in which the shadows are cast.

The Rembrandt, or shadow picture, although one of the most beautiful styles ever introduced, is, I am sorry to say, slowly losing ground, or, in other words, is not receiving the encouragement from photographers that it should receive. In fact, many refuse to make them altogether; for the reason, probably, that they are difficult to produce. Ignorance seems to prevail among a great many in regard to the method of lighting; nine out of ten use a light entirely too harsh, and that, too, from a window or side-light which is about on a level with the face of the sitter. Such a method is altogether wrong. In my own work I adopt the following method, which can be worked successfully by any one. It is this:—Begin by placing your grey shaded ground near one end of the side-light, and about seven feet away from the glazed surface; swing the side of the ground farthest from the light around away from the light, then put the chair in its proper place, after which you may pose the subject, turning the body still farther from the light. If the subject is round and plump, you can shut off the side light almost entirely, leaving only about two feet of glass at the upper end, after which the skylight curtains must be drawn down to within four or five feet of the side-light, and left there; next move the camera-stand around away from the side-light, after the same

manner as the background, until you come square with the background again; now adjust the rest to the sitter's head, turning the head a little toward the side-light, but not too much so, and step back and observe the style of light at that moment playing over the face of your sitter, and see if it does not resemble what is generally known as the "Rembrandt." A little practice in operating diagonally across your room will show you a variety of effects of light and shade of which the uninitiated would never dream. By causing the light to proceed from a point some distance above and to one side or other of your sitter, you avoid that too common error of many—the melting together of the high lights of the cheek and nose.

Notes and Queries.

A PERPLEXING BATH.

DEAR SIR,—My negative bath is shrouded in mystery, which in vain I have endeavoured to unravel. I write to you in the hope that either yourself or some of your readers may be able to offer some explanation. I mix my bath in the usual manner with distilled water, and 35 grains to the ounce. For a few days the negatives are beautiful and soft, but after that time they are flat and grey, and I cannot get the least roundness or body in them; and after they are washed and allowed to drain a minute or two the surface looks as if they had been thoroughly peppered. I know the bath is not over-iodized, for I iodize by putting a plate in for a few hours. The paper looks the same after sensitizing, so that it must rest either with the water or the silver, of which I have tried various (two) samples with same result. I may add that the bath is "examined" with minute particles even after filtering, and looks like "fluff" from a linen cloth; and the paper bath, after standing an hour or two, gives a black deposit at the bottom of the dish. I have tried every remedy, from sunning to a dose of cyanide, and to no effect. Can you give me any idea as to the cause?—Yours respectfully,

Puzzled.

[The bath may easily be over-iodized by leaving a plate in for a few hours.—ED.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The monthly meeting of this Society was held on May 1st, at the Society of Arts, John Street, Adelphi, the Rev. F. F. STATHAM, M.A., F.G.S., in the chair.

The minutes of the last meeting were read and confirmed.

The CHAIRMAN then read a letter that he had received from Mrs. P. Le Neve Foster, in reply to the letter of condolence written by the Chairman at the request of the Society. Another letter was also read that had been received by the President from the Belgian Photographic Society, referring to a competition that is about to take place for the best emulsion process: a present of 500 francs had been presented to them to be awarded as prizes.

Mr. G. F. Williams and Mr. T. O. Dewey were elected as members of the Society.

Mr. A. BRITTLEBANK then handed round to the members, for inspection, proofs of the portraits taken of the President at the last meeting by his new apparatus for burning magnesium.

Mr. W. B. BOLTON submitted for inspection some very fine specimens of portraits taken by ordinary coal gas by Mr. Laws, of Newcastle, in twenty-five seconds. A parcel of pamphlets had been received by the Secretary for distribution among the members, from Mr. J. Buxton Payne, of Manchester—"Developing Instructions for Dry Plates."

The Chairman then called upon Mr. FOXLEE to read his paper on "The Continuing Action of Light in Carbon Printing" (see page 218), which he illustrated by numerous specimens.

The PRESIDENT said he felt sure that every member present must feel pleased with the admirable paper that had just been read, so well illustrated as it had been, and it only showed how difficulties could be overcome by perseverance.

Mr. BOLAS said that he had often heard it remarked that it was very difficult in carbon printing to get the same results

twice. When the same exposure had been given and no end of pains taken to get the actinometer paper to register the tints as even as possible, and also every precaution to keep the tissue dry, in hopes of getting even results—all had been to no purpose. But what he had just heard from Mr. Foxlee, relative to moisture, could not fail to be a boon to many who had to get off a number of prints in dull winter weather. Success seemed to lay in the requisite degree of dampness to keep up this continuing action, and that was best obtained when the tissue was only slightly moist; but when the tissue was very wet, this peculiar action did not occur so much; and, on the other hand, tissue, when very dry, was very insensitive. It was also a fact that when tissue was sensitized, and just as it was taken off from the bath, it could be carried into strong light; but on drying, the sensitiveness was obtained. He himself had carried wet tissue into very strong light without any injury to it; it printed all right when dry.

Mr. COLLINS suggested that the admirable specimens of Mr. Foxlee's would be very valuable if they could be reduced in size, and issued to the members as a presentation print, as a guide to them for future reference.

Mr. PEARSALL said that he had had no experience in carbon printing, but, gathering from what he had heard, it seemed to him that Mr. Foxlee had cleared up many points.

Mr. AYERS said he did not think that this action applied simply to carbon printing, but, so far as his experience was concerned, also, to a certain extent, to silver printing, for he had found that prints in the frames that had not finished printing over night were found sufficiently done by the morning, and did not require to be out again.

Mr. BOLAS observed that chloride of silver could be exposed to light in a sealed tube without darkening.

Mr. FOXLEE remarked that the examples were kept in a metal case, and others in a closed drawer.

Mr. PEARSALL said that some of this peculiar action might be due to ozone, as ozone was produced under many different conditions, which ought to be taken into consideration.

Mr. FOXLEE, in reply to a question by Mr. Brooks, said that the action was more rapid when the tissue had been mounted with bichromate solution on its supports; but if all the free bichromate were washed out, the action did not go on; so, by keeping the tissue with the bichromate on it in a closet at a certain temperature, a greater number of prints could be got off in bad weather. He further remarked that if he had a novice to teach, he would rather teach him carbon printing than silver, as it was so much less trouble. At the Autotype Works the printers were quite ignorant of silver printing. Not long ago he had to make a silver print, and they were quite astonished to see the image fully out when taken from the frame; they had never seen such a thing before.

Mr. HARRISON then demonstrated the method of forming reflectors for any class of work, to throw the light in any direction it might be required.

MESSRS. WRATTEN and WAINWRIGHT passed round for inspection some instantaneous photographs (five in number), cabinet size, of the Oxford and Cambridge boat-race. Mr. Wratten said they were taken under very great difficulty. The train he was in arrived late, and the place he intended to occupy was taken up, so he had to lay a board across the top of some chimney-pots, and do the best he could. The examples were very fine indeed.

Mr. PAYNE JENNINGS said that he had never seen such marvellous examples of instantaneous photography which gave so true a representation of the race on such a day.

Mr. WRATTEN said they were taken with a D lens of twelve inches focal length, and a five-eighth stop, and exposed with a drop shutter; and the negatives were untouched.

Mr. YORK exhibited a very clever and compact apparatus for washing emulsions.

Mr. A. COWAN exhibited a very ingenious instantaneous electric drop-shutter, whereby all vibration of the camera was avoided; which was well received by the members.

Mr. WM. BROOKS said that he had that day received the prospectuses and prize list from the Royal Cornwall Polytechnic, to be held on August 26th, 1879, and he hoped this year to see a goodly number of exhibits; and he also wished to state that it was the only society in the country that offered awards annually for photography, and he only wished members could pay a visit to the Exhibition when it was opened, as he was sure they would be delighted. Another department (a new one) that he wished to call attention to was a

photographic appliance department, for cameras and apparatus, and also the magic lantern, as he considered that instrument was now closely connected with photography in exhibiting its productions. The judges thought it expedient to have this year what they might term an open list, as of late processes and different classes of pictures were so numerous that it would be impossible to enumerate every class; but whatever was sent for exhibition would be fairly dealt with on its merits. Mr. Brooks said that he should also have great pleasure in giving any information respecting any point that might not be clearly understood from the prospectuses, which he would distribute to the members, by writing to him at Reigate.

According to the notice given at the last meeting, a certain amount of the surplus presentation prints were then disposed of. A few are still remaining, which will be disposed of at the next meeting.

Mr. HARRISON said he would describe at the next meeting a new apparatus for artificial light; and Mr. BRITTELBANK would also read a paper, which would be duly announced.

The meeting was then adjourned.

PHOTOGRAPHIC SOCIETY OF VIENNA.

An ordinary meeting of the Society was held on the 11th March under the presidency of Dr. E. HORNIG.

A communication was received from Professor J. HUSNIK, containing remarks on the photographic reproduction of linear and stippled drawings. For this purpose, he observed, the asphalt process gave the sharpest and clearest pictures, but was attended by many difficulties. Among these difficulties more especially are the circumstances (1) that the size of a plate in the asphalt method is limited to a square foot at most; (2), that the zinc plate used as a support must be highly polished, which renders it very expensive; (3), that the asphalt is sensitive in only a slight degree. Photographs of line drawings have been obtained now for some years by means of photo-lithographic transfer paper, but it is not generally known that stippled drawings can be reproduced quite as successfully by the same means. Professor Husnik obtained these photographs himself, by passing his gelatine paper through a glazing press, thus obtaining a highly polished surface capable of reproducing the most delicate and finely gradated shades of the drawing. The difficulty of preserving the photo-lithographic paper for any length of time in a sensitive state he has overcome by keeping it in a box whose floor is covered with ammonium carbonate.

Dr. J. M. EDER sent a report on some samples of collotype gelatine by Heinrichs, of Höchst-on-the-Main. He has examined three kinds of their gelatine distinguished by the letters L, H, C; they are all nearly colourless and transparent, soften quickly in cold water, and melt at about a temperature of 33° C. All three sorts, either before development or during that operation, became perceptibly grained, which is very necessary for collotyping. The quality L seemed to be best adapted for collotypes, as it possessed the greatest power of resistance; the quality H, on the other hand, is most suitable for the carbon and other similar processes, as it is more soluble, and thus materially promotes the development of the image.

The PRESIDENT remarked, that after Dr. Eder's report, the dealers in photographic materials would no doubt keep all these gelatines in stock; and

Herr J. ALBERT, of Munich, who was present at the meeting as guest, stated that for his own business he had been in the habit of ordering his gelatine direct from Messrs. Heinrichs.

Another communication was read from Prof. HUSNIK, on his experiments on the intensifying of negatives, photographs of prints, and engravings. The lead intensifier of Dr. Eder, he had found in many cases not only difficult to use, but uncertain in its results. He had tried various other means for intensifying negatives, and found the only one on which he could rely to be a solution of protochloride of mercury in iodide of potassium. This negative he first prepares entirely by the wet method, using only a pure iodized collodion, and developing with iron and sugar. Upon the strength of the developed picture depends entirely the method of intensifying. If the image be sufficiently vigorous, it is at once washed, and fixed with hyposulphite; but if the exposure had been too short, it must be strengthened with pyrogallie acid previous to fixing. Afterwards the picture is intensified with the solution of mercury chloride and potassium iodide. In many cases the solution of chloride alone would suffice, but if that does not give sufficient vigour, then the solution of mercury in the iodide must be employed. This latter is prepared by precipi-

tating the iodide of mercury from the solution of chloride by potassium iodide, and redissolving the red precipitate in excess of the potassium salt.

Herr JAFFE believed that Prof. Husnik had exaggerated the difficulties of intensifying by means of a solution of lead; he had found this process gave good results, although the solution of mercury iodide might be used occasionally with advantage. Plates might be left in the lead solution for a considerable time while the operator could go on with his other work, and any green fog which might arise from defective washing could be removed by hydrochloric acid.

A discussion arose on the extra-rapid process of M. Boissonas. The president stated that he had only heard of Klary's experiments in Frank's studio (though now M. Klary was disavowed by M. Boissonas), but Herr ANGERER, who had been present at some of these experiments in the company of Prof. Kollar, of Pesth, explained that the results were by no means satisfactory.

Herr LUCKHARDT referred to former reports of his in a number of so-called instantaneous processes, of which he maintained that only those of Messrs. Chambay and Krole met all the requirements of an extra-rapid process, and one of the members present informed the meeting that Herr Krole's process would shortly, by arrangement with a manufacturing house of photographic materials, be made available to a large circle of customers.

PHOTOGRAPHIC SOCIETY OF BERLIN.

At the usual fortnightly meeting of this Society, held on the 3rd April, Professor FRITSCH exhibited a large number of Col. Woodward's photographs of microscopic objects, demonstrating the enormous progress which micro-photography has made of late years. It is almost incomprehensible that at a distance of ten metres between the sensitive plate and the objective, which latter is hardly larger than the head of a pin, such perfectly modelled and equally illuminated images could be produced. A unanimous vote of thanks to Prof. Fritsch was passed, and he was requested to express to Col. Woodward the acknowledgments of the Society.

Herr DUBY inquired whether, for correcting the difference of focus, Professor Fritsch had adopted an absorption cell filled with a solution of the ammonio-cupric oxide, or a displacement of the ground glass plate.

In reply to this question, Herr FRITSCH explained that to the screw micrometer of the objective he had fitted a toothed wheel, into which a pinion of half the pitch was geared. By this means an excessively small motion could be impressed on the screw-micrometer, and the distance through which it was turned could be easily read off. A strip of glass with fine lines engraved on it is placed across the stage, and by means of it the difference of focal length is determined; it is then adjusted by turning the pinion so as to advance or draw back the objective.

Herr KARDATZ described an arrangement that he had seen in a photographic studio in San Francisco. This consisted of a screen of wire netting placed at about the distance of a foot from the roughly painted background, which had the peculiar effect of concentrating all the vigour of the image, and consequently the attention of the observer on the portrait itself, while the background became more indistinct.

Herr SUECK referred to the practice which at one time prevailed of stretching a piece of gauze in front of the background, with the object of giving greater softness to the picture. The plan, however, failed in producing a satisfactory result, though probably a wire netting with a rough background would be more effectual.

Herr DUBY laid before the meeting a number of photo-mechanical prints from the works of the Photo-Engraving Company of New York. Great admiration was excited by the perfection to which this kind of printing had been brought, and it was determined to keep for some time the collection on view for the benefit of the members.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The next meeting of this Society will take place on Tuesday next, May 13, at the Gallery, 5, Pall Mall East (the summer exhibition of the Society of Painters in Water Colours being on view), when, in addition to other matters, a paper will be read

by Mr. C. Bennett, closing the discussion upon gelatine emulsions.

PRESENTATION PRINT.—The presentation print of the Photographic Society of Great Britain is now in course of issue to members. It is the fine view at Bettws-y-coed which obtained for the School of Military Engineering at Chatham a prize at the last Exhibition, printed by the Autotype Company in printing ink of the photo-collographic process, of which it is a very admirable example. There is one curious omission, the result of an oversight on the part of some one. The producers of the negative, the fact that it was a prize print, the place where the view was taken, the name of the printers, are all duly set forth; but there is no allusion to the fact that the picture is the presentation print of the Photographic Society of Great Britain.

CATALOGUE.—We have received a copy of the interesting catalogue of Messrs. Watson and Son, opticians, of High Holborn. It contains details of an extensive assortment of lenses and apparatus generally, as well as other photographic requisites, which it will be greatly to the advantage of photographers to consult, especially all those who may contemplate increasing or altering their stock of photographic appliances.

PORTRAITS BY GAS LIGHT.—We have been favoured by Mr. Laws, of Newcastle-on-Tyne, with a further example of portraiture by ordinary gas-light. An excellent cabinet produced with an exposure of 25 seconds is brilliant and finely modelled. The burner consisted of 68 jets, with an illuminating power equal to 1,250 candles. The exposure for eard portraits is about 15 seconds. We hope to have more to say on this subject shortly.

COLLODION AND GELATINE FOR EMULSION.—Mr. Obernetter says, in speaking about the gelatine plates sensitized with bromide of silver, that they are the most sensitive plates he ever used, but the drawback to them is the drying and the trouble of developing them. He therefore prefers the bromide emulsion, which he plunges, after being set, in a solution of 1 part gelatine, 30 parts of alcohol, and 20 parts of warm water. Plates thus prepared can be kept for some time, while others not coated with gelatine will have to be developed right after exposure.

CARBON IN AMERICA.—Mr. Gentile, an enthusiastic carbon printer, writing to the Editor of the *St. Louis Practical Photographer*, says:—"I want you, friend Fitzgibbon, to urge on all those who have invested their money in carbon not to be such fools as to abandon it, but to go at it again with renewed energy. But they must go to work in the right way; not like a firm in New York are doing, as told to me by our mutual friend Howard, of the State of New York carbon fame. They had a distinguished individual to whom they paid the very liberal salary of three dollars per week (about twelve shillings) working carbon for them, but with very indifferent success. How could they expect otherwise? A really skilful printer ought to be worth nearly as much as an operator. One of the firms that I mention in this letter pay their carbon printer thirty-five dollars per week (about seven pounds), but he is a success. In conclusion, I will only say to all those who are interested in the progress of photography, that Mr. Lilienthal, who takes great interest that others also may succeed in working carbon, is most willing to impart to all those who wish to come to his studio a thorough knowledge of his *modus operandi*. And I, as the President of the Carbon Society, which I hope to see give a good exhibition some day not far distant (St. Louis, I think, would be a good place), assure all carbon licencees that the fault of non-success lies with them, and not with the process."

A NEW MEASURE OF ACTINISM.—It has been maintained by Schoenbein and others that perfectly pure sulphuric and nitric acids containing no trace of nitrous acid would not produce any change in iodide of starch. Professor Leeds stated that he had been unable either to obtain acids so pure, or to make them himself, but that his iodide of starch solutions were invariably affected by them. Upon reasoning on the circumstance, it struck him that iodides might be decomposed by light in the presence of acids, a supposition which afterwards proved true; and he based upon it a method for measuring the relative actinic effects of different kinds of light. Upon exposing such solutions for the same length of time to the sun's rays, to the electric light, and to a magnesium light, and then comparing the results in a colour comparator, he was surprised to find that the electric light had produced over three times as much chemical effect as sunlight, while the action of the magnesium light was but a very small fraction of it.

To Correspondents.

R. G. F.—The effect of distemper colouring is excellent for portrait backgrounds, but the screens are easily injured, and not easily repainted by amateurs. On the whole, we think oil flattening answers best for backgrounds. To produce such a flatted surface, mix the paint with the slightest possible trace of oil, using turpentine almost entirely. Some skill is necessary in applying the paint.

O. P.—In precipitating a negative bath with carbonate of soda, we have often noticed that towards the end, a dirty bluish-black solution has remained, containing the impurities of the solution; this has been and should be rejected. 2. The scum you describe is generally present. We remove it with strips of clean blotting-paper drawn over the surface of the solution before immersing a plate.

JENNY J.—They were collodion positives to which you refer, and the effect was produced by a secret formula, in which a solution of bichloride of mercury was a principal element. Ferrotypes may also be whitened with bichloride of mercury. The question of permanency of such pictures is a difficult one, as some fade or darken rapidly, whilst others remain unchanged. If the bleaching be carried as far as possible, we believe that the result will be tolerably durable. Its tone will, of course, be lowered by varnish.

GODOLPHIN.—Chloroform is the best solvent of india-rubber that we know. Some samples of benzole do not readily dissolve india-rubber. When there is any difficulty, the best plan is to shred the india-rubber as small as possible, then cover it with chloroform, which will readily dissolve it, forming a paste, which may then be easily dissolved or diluted with benzole as required. Bisulphide of carbon is a good solvent, but it has an offensive smell.

R. F. L.—Marine glue answers well as a cement for glass in making glass baths. The pieces of glass must be made hot, and the glue melted. This is best done by bringing it into contact with a flame, or by putting bits in an iron spoon and holding that over the fire.

G. G.—In our experience a strong developer gives a softer and more detailed negative than a weak one. We should call thirty to fifty grains strong, and five to twelve grains weak. A weak developer develops slowly, and gives more intensity to the high lights relatively than a strong one.

J. H. MORTEN.—Judging from the examples enclosed, your lens is of too short a focus to do justice to standing card portraits. You may improve the definition by using a small stop, but that will prolong the exposure. Most ordinary quarter-plates will do for bust card portraits, but not for standing figures. Your half-plate will give better covering definition for such figures; but the focus is too long for good results. With the thick atmosphere often prevailing in this country it is desirable to avoid the use of a lens of too long a focus; the mass of misty atmosphere is photographed as well as the figure, and the result is a dull foggy looking picture. A lens made for card work will answer best.

G. R. L.—It is evident that your negative is too thin; it sadly lacks intensity, and hence the flat grey prints. Lack of intensity may be due to many causes: the use of new collodion, over-exposure, the use of a strong developer, bad light, driving off the free silver in applying the developer, and other causes. Probably using the collodion somewhat ripper will help you. The addition of one grain of pyroxylene per ounce of collodion is often useful in such cases.

EXPERIMENTALIST.—To make paper prints or negatives transparent, apply white wax. Sometimes the wax permeates more thoroughly if the negatives have been soaked for a short time in hot water, to remove the size. The wax must be melted, and the paper saturated with it, and afterwards ironed between two sheets of clean blotting-paper, to distribute it equally and remove excess.

ST. ASAPH.—Dry plates most undoubtedly answer best for long exposures. It is possible to give an exposure of an hour with a wet collodion plate; but it requires precise conditions to do this with perfect success, and the risk of stains, &c., is very great. With dry plates there is no such trouble, and you may buy them ready prepared if you wish, in which case you have only to expose and develop them. Indeed, in some cases, it is possible, we believe, to reduce the trouble still more, as the manufacturers will, if proper arrangements are made, undertake to develop them as well. But it is wiser to acquire skill enough to develop at least for yourself.

A YOUNG HAND.—There is no absolute standard for the strength of baths. As a rule, a negative bath may vary from 30 grains to 40 grains of nitrate of silver per ounce. The printing bath varies more, from 20 or 30 grains to 100 grains and upwards being occasionally used. About 50 grains, or a trifle less, per ounce are most commonly used.

S. F. CLARKE.—The letter was duly forwarded. Several Correspondents in our next.

The Photographic News, May 16, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

AN EYE TO COLOUR—GELATINE PLATES ABROAD—INFLUENCE OF COLOURED LIGHT UPON LIFE—PHOTOGRAPHY IN NATURAL COLOURS.

An Eye to Colour.—Dr. Henry H. Dor has presented to the Academy of Science and Literature of Lyons an interesting note upon colours and colour-blindness. The eminent oculist combats the theory of Mr. Gladstone and other scholars, that our ancestors were colour-blind, but he makes the extraordinary statement that persons who do not possess a knowledge of physics find much difficulty in distinguishing the colours of the rainbow, and only see in it three or four colours instead of seven. Colour-blindness, again, he says, must not be mistaken for disability to appreciate luminous intensity, for differences in intensity are apparent to those who have otherwise faulty eyesight. Thus a colour-blind photographer would, no doubt, be able to do his work perfectly well in spite of a lack of appreciation of certain tints. Recent investigations of the human eye have shown, indeed, how very little we really understand of this organ. Not long ago it was believed by many, at least, that our eyes saw simply because the retina or some other portion was set in vibration by waves of light striking the eye—that the eye, in fact, suffered vibration to a greater or less degree, and the colours we appreciated were in reality vibrations, and nothing more—that, in a word, our sense of sight was akin to that of sound. But the discovery of “visual-purple” in the eye—of a photographic film which is capable of being impressed in the same manner as the chloride of silver—has materially altered the views of the oculist. M. Boll, to whom, we believe, is due the discovery of this photographic action of the eye, has proved beyond a doubt that the “visual purple” plays a most important part in our organ of sight. It is a fine purple surface, which is continually freshened or resensitized by another organic film below. M. Boll has shown that the “visual purple” is capable of being impressed not only in life, but also in death, and our readers may remember his experiments with a rabbit's eye which were conducted in the presence of other learned physiologists. Possibly, colour-blindness, as it is called, may be due to some change or modification of this “visual purple” or photographic film, for there is little doubt that people do not always see tints with the same degree of intensity. Some experiments were made at Venice not long ago with coloured lanterns, which were set up upon the shore, and watched from boats on the water; the object was to see what colour was longest visible and the most distinctly seen. Thus, it was found that while some declared that they could see a green light, others avowed that it appeared white, until at a very long distance from shore one and all pronounced the green to be white. Red was visible as red longer than any other colour, but the lighter blues and greens were undistinguishable from white light at a certain distance. Thus in the case of green, colour-blindness at a distance is not an unusual circumstance, and this, perhaps, accounts for the fact that so many railway servants, when they are tested, are unable to pass the test as to colours; they know a red light and a white light when they see them, but the green at a distance looks like a pale white. The science of colours and colour blindness is one, therefore, upon which we have still to learn a great deal.

Gelatine Plates Abroad.—Gelatine plates form the subject of discussion at most of the foreign societies just now, but nearly all the experiences discussed have been secured with plates of English manufacture. Those of Messrs. Wratten and Wainwright, and Mr. Swan, Mr. Bennett, and Mr. Kennett, are the plates spoken of, and many are the expressions of surprise and astonishment at the sensitiveness of such plates. Nearly every beginner seems to make the mistake of not employing a proper dark room—

or, rather, a dark room properly lighted with ruby glass. Hence the films, when developed, generally show a fogged image. Once for all, beginners should understand that the ordinary orange glass is no safeguard against the fogging of gelatine plates, and the first thing to be done is to modify one's arrangements in this respect. Some photographers will not trust daylight at all, let it be ever so thoroughly filtered. They shut out every ray, and have recourse to a lighted candle shaded by a ruby shade. Others, again, employ double casements of ruby and orange glass, so that they may be in a position to work the gelatine process at any time; while one gentleman we heard of, who has the advantage of a very spacious dark room, sets up a tent inside this that has a ruby window. Certain it is that one cannot work gelatine plates except in a modified light, while it is equally certain that photographers who undertake all sorts of work cannot afford to be without so sensitive a medium. If gelatine plates do not suppress the use of the silver dipping bath altogether, they will, assuredly, cause it to be less frequently employed, whether in the studio or out-of-doors. No one has such a love for the silver bath as to stick to it through thick and thin, and when it grows obstinate in very hot or very cold weather, it will be agreeable to know that its use can be dispensed with at any moment by employing gelatine plates. But, as we have said before, a thorough modification of one's dark room is absolutely necessary as a preliminary towards working the gelatine process with success.

Influence of Coloured Light upon Life.—Some further experiments appear to have been conducted in France upon the influence of coloured light upon animal life. It may be remembered that some time ago rose-coloured light was stated to be beneficial in the treatment of certain human diseases, and lunatics especially were found to be bettered in health by living under the influence of such light. We do not know how far these views were subsequently confirmed, but it is never well to accept the results of experiments of this kind too hastily. Some recent investigations that have been made with eggs and tadpoles do not add much to our knowledge in the matter. Flies' eggs are hatched more readily, it is said, under blue or violet light than under green. Frogs' eggs and the eggs of young trout are favourably influenced by violet rays, while next in order are blue, yellow, and white rays. Both red and green are reported in these experiments to have an injurious influence, and in the main the ordinary white rays are said to be the most beneficial to animal life, as they are, we know, for seedlings and plants. These are never so healthy as when grown under white light; they are heavier, and on burning yield more ash than when grown under the influence of coloured rays.

Photography in Natural Colours.—M. Cros appears to be still working at the problem of producing photographs in natural colours by the aid of three negatives produced of the same object under different conditions of lighting. He employs, it is said, three mediums in order to produce his three negatives, taking a picture of his object in the camera, first through a solution of nitrate of nickel, next through chloride of cobalt, and a third negative through bichromate of potash. In this way he gets three negatives, in which respectively the blue, yellow, and red rays have been cut off. To produce his pictures of the image in its natural colour, he makes three prints with his three negatives, employing respectively blue pigment tissue, red pigment tissue, and yellow pigment tissue. The three impressions (which should be transparent) when placed one above the other should yield the object in its pristine tints. However perfectly the analysis of the colours has been performed in the first instance by filtration through the three solutions we have mentioned, the subsequent synthesis, or building up of the tints afterwards, cannot be, as we have previously pointed out, but faulty in the extreme. It is impossible to secure

three pigment tissues of natural, unalloyed blue, yellow, and red; and as these are not true to nature, the resulting combination of the three cannot be true either. Neither, therefore, M. Cros or M. Ducos du Hauron, who is working on similar lines, is likely to achieve success, however nearly they may approach to it.

A FEW PRACTICAL ILLUSTRATIONS OF THE VALUE OF PHOTOGRAPHY IN LAW AND MEDICINE.*

BY ROBERT BIGGS, M.R.C.S.,
Deputy-Coroner for Somerset.

I AM sorry that the few desultory remarks I am about to make should have been dignified by our Honorary Secretary with the title of a "paper." Want of time during the last few months would have quite prevented my preparing a *paper* worthy of your acceptance, but taking Mr. Daniel's request as a very high compliment to one of this Society's youngest members, I venture upon a few "illustrations," the only interest of which lies in the fact that they are for the most part derived from *personal* experience.

I need not remind you that photography has a widely extended sphere of influence. In almost every department of art, science, literature, mechanics, and trade it has become a most useful auxiliary. In art, its reproductions of sculpture and painting have familiarized the multitude with the noblest creations of ancient and modern artists. By photography the colossal buildings of ancient Rome, with its architectural beauties; the temples of Greece; the still ancient, though more modern, cities of Europe, as Venice with its Bridge of Sighs, its "palace and its prison on each hand;" the Square of St. Mark, with its columns looking down upon the spectator with all the sad dignity of what it has been; the leaning tower of Pisa; the noble old cathedrals and churches of the Continent and of our own country, are all, thanks to this art, familiar even to the humblest student; and going back further still to the buried cities of Herculaneum and Pompeii, to the sacred ruins of Jerusalem, and to the lost magnificence of Nineveh or Troy; no sooner do they yield up their solemn secrets to the scholarly investigator, but this exquisite art steps in to reproduce for all, those beauties which would otherwise be limited to so few.

In science, again, what has it not done? In astronomy, thanks to Warren de la Rue, the map of the moon is almost as familiar to us as that of the earth. Its value in scientific investigation of eclipses of the sun has, under Captain Abney, become almost perfect. At the Greenwich Observatory it has been trained to register the daily and hourly aggregate of sunshine, with the variations of the barometer and thermometer, far more accurately than the most highly trained observer. In other branches of science it has given us much insight into the principles of each. It can render visible to our eyes the mysteries of the waves of sound or light, and which, without it, would much longer have remained *still* mysteries.

In literature it has given us to see each for himself specimens jealously guarded, and, indeed (generally speaking), utterly inaccessible. The Domesday Book, the rare originals of Shakespeare or of Chaucer, and valuable private and public historical records, are open to us all.

In mechanics, no important machinery ever leaves its factory till its form and appearance have been indelibly fixed, so that long after the machine itself has perished, its true resemblance still exists for future reference.

In trade and commerce still we find its use. You want a house: the agent sends you a photograph. You require a clerk, an assistant, or a secretary: you advertise "send carte." You hear of a horse or carriage, a chest of drawers,

or a drawing-room table: a photograph at a glance tells whether it is what you require. Nay, more, you want a wife: the *Matrimonial News* compels you to deposit your photograph, "not necessarily for publication, but merely as a guarantee of your good faith"; to show that you are not a base deceiver; that you are not imposing, under the pretence of youth and good looks, your grizzled locks and ugly features, on some poor simple maiden's innocence.

Now, the question arises, why is this? Why should photography thus supersede art? The answer is not far to seek. There are many reasons. First, its cheapness; second, its simplicity; third, its power of indefinite reproduction; and fourth, last, and most important of all, its absolute truth and fidelity. It *cannot* lie. It acts by the immutable laws of science, which are always the same—"which were, and are, and are to come." The aim and object of the painter is to make a *picture*; the object of photography is to *tell the truth*. As mathematics or logic is to poetry, so is photography to art. Each has its own sphere, and the sphere of each, we may be thankful, affords scope enough without either trenching upon the domain of the other.

What is there more pleasing to the eye than the beautiful creations of the painter? But yet they are for the most part *his* creations! They are in reality fiction founded upon fact; but still much of their beauty is *fiction*. No portrait painter could live by his art, and very little pleasure could be derived by looking at his works, if he adhered strictly to the literal truth; but so long as he merely uses his art to heighten any excellences which may exist, and soften asperities, while retaining that *vraisemblance* which is his main object, no one complains; but on the contrary, they can the more highly recognize his genius, just as when we read a parliamentary debate we know that the effect of the speeches being properly and fairly given, how much of the pleasure we derive is due to the skill of the reporters, by whom rugged and broken sentences are worked into a smooth and harmonious oration.

But, as I have said, valuable as all this addition and decoration may be, there are cases in which, for special purposes, it is utterly inadmissible, and of these special purposes in the two professions of Law and Medicine it is essential that everything else should be sacrificed to *truth*: plain and unembellished truth. As evidence must be given the truth, the whole truth, and nothing but the truth, and here the lens and camera are unimpeachable witnesses: they are, indeed, the only ones upon whom cross-examination is always futile; and silent witnesses as they are, they speak more forcibly to a jury than the most silver-tongued eloquence of counsel, or the most impressive charge of the judge, because the truth as told by photography is not only truth, but *unbiassed* and *unprejudiced* truth. No "fear, favour, or affection" can influence *its* testimony, and no threat or promise of reward can make it vary in its statements; and when our great poet Tennyson tells us that "the lie which is half a truth is the basest of lies," this witness at least is one which will never incur the odium of such a charge.

I should make these remarks far too long were I to bring forward the cases in which portraits obtained by photography had been given in evidence, or even scenes of buildings and localities. These are matters of every-day occurrence, and you are all familiar with them. I would, however, just allude to the great value of photography in the reproduction of letters and documents, by which it is easy, as in a great trial a few years ago, to give the jury a copy of an immense mass of documents, which would otherwise have had, at an enormous waste of time, to have been handed round to them separately for inspection, examination, comparison, and which was entirely obviated by means of photography; and it is with reference to this use of it in copying writing that my first personal illustration is given.

* Read before the Bristol and West of England Amateur Photographic Association.

At a serious railway accident, a few years ago, a question, which may have been a most important one, turned upon an entry made in the signalman's book. An examination of this book showed a suspicious appearance, and led to a discussion whether it had been tampered with by erasing a figure and substituting another; but the jury were quite unable to agree on the subject, some of them expressing an opinion that it had, and others that it had *not*, been interfered with since the original entry had been made. I had my own opinion on the subject, which I had, of course, no right to express; but during the few days of adjournment I had a part of the page not only photographed, but enlarged. This is the copy so made, and I think you will see, on careful inspection, that it proves unmistakably the fact that there had been erasure and subsequent entry of different figures [*photograph shown*].

The next case I shall mention is also connected with another railway accident, which involved the death of a large number of people, and this also was a case in which I obtained a magnified copy of the entry in the signal book. I have, unfortunately, mislaid this specimen, which not only proved the fraud, but showed precisely the manner in which it had been perpetrated.

The next illustration I have to offer is the accompanying picture. You will readily see that it makes no pretensions to be a work of art; it is altogether, perhaps, as hideous and repulsive as a photograph can be. It is, indeed, a ghastly object, and a ghastly and painful history is attached to it.

In April, 1874, I was called on, in the discharge of my duties as Deputy-Coroner of this division, to hold an inquest on the body of a female child found in a field at Totterdown, near this city. Cases of this kind occurring in newly-born children are, I regret to say, far from uncommon, and generally speaking are most difficult, indeed, generally impossible, of detection; but this case was altogether exceptional. It was not new-born, but a child of three or four years old; its frame frightfully emaciated, and it appeared to have been doubled up and tightly compressed so as to be packed into a small compass for conveyance in a carpet bag or similar vehicle. The result of the post mortem examination was absolute proof that the poor child had been starved to death; no trace of food could be found in the whole tract of intestines, and it was proved almost conclusively that nothing whatever could have entered its lips for many days prior to its death. At first there was a strong opinion among the jury that this horrible crime had been perpetrated a long distance away; but on consideration I thought this very improbable, because of the weight and size of the body, and the difficulties and risk of travelling with it. It seemed to me more probable that such a hideous burden would be got rid of as quickly as possible, and I hazarded the opinion that the guilty parties (if detected at all) would be found within a dozen miles of the spot where the body was found, viz., either in Bristol or Bath. The features of the child were distinctly marked, and of a peculiar expression, and I arranged with the police to have the body photographed before burial, and this was done by the then photographer to the Bristol Gaol, and meanwhile diligent investigation was carried on in Bristol by Sergeant Dewey of the County Police, and in Bath by Detective Berry of the Bath force. Three or four weeks after the inquest the latter called on me to borrow the photograph, and the next day he arrested a woman who turned out to be the mother of the child. He had shown the photograph now before you to several persons, who had each instantly recognised it as that of the prisoner's child. Ample evidence was obtained to prove that death had occurred from systematic starvation by the mother without the excuse of want, and that her deliberate intention was to get rid of a burden which was a tax and encumbrance. She was tried and convicted at the ensuing Assizes before Lord Coleridge, who, in sentencing her to death, used language which held out no hope that her life would

be spared; but the accumulated horrors of her crime, and its detection, with the anxiety of her trial and conviction, and, let us hope, the sting of conscience and the pangs of remorse, were too much for the wretched woman. Her mind gave way on the day of her conviction, and her life hung on a thread for several weeks. The capital sentence was commuted, and she is now undergoing confinement for life as a criminal lunatic. In this case there can be no doubt that the discovery of a horrible crime and detection of its perpetrator was due to the melancholy picture now in your hands.

As in Law, so in Medicine, scrupulous fidelity of illustration is required: not that I am undervaluing the skill of the artist, to whom, indeed, the profession owe much more than I can acknowledge. Those who have seen modern anatomical works must know that the highest skill of the highest men has been bestowed upon this subject; but still there are many matters in medical science where such aid is inadmissible or unobtainable. As a matter of simply retaining a visible record of a case, this art is most valuable and useful, and I show you the accompanying as specimens of remarkable cases in which I have been able to avail myself of it [*here the speaker exhibited a number of photographs strikingly illustrating his remarks*].

I have been favoured with some beautiful specimens bearing on this subject by the Woodbury Company, and while gratefully acknowledging their kindness in the matter, I would take the opportunity of saying that if anything could add to the value of photography in its varied uses, it would be the fact of its faithful reproductions by this process. Perhaps the highest compliment I can pay it is to say that I had intended to show a book this evening as a specimen of one illustrated by silver prints, believing that the pictures had all been printed off from the negative, till, among the specimens sent me by the Company, I found these identical illustrations, which proved them to have been executed by the Woodbury process. The large number of books illustrated by this process are sufficient evidence of its appreciation for purposes of illustration.

Now among these specimens are two cases of strabismus or squint, taken before and after operation. Had these been merely drawings we may fairly have considered that there was some little exaggeration—either that the deformity or the cure had been too highly coloured; but knowing the veracity of our witness, we are satisfied that this is not the case, and we can more highly appreciate the skill which has wrought so great a transformation.

Again, some time ago an American surgeon devised a new mode of treatment in the disease known as spinal curvature. He published the details of his treatment and the description of his apparatus, but, to make his description more clear, his work was illustrated by photographs reproduced by Woodburytype, showing the steps of his manipulation in its various stages, and rendering the whole so clear that any medical man could adopt the plan who had never seen or heard of it previously.

Here again, from these Woodburytypes, I select another specimen where photography takes a place denied to art [*photograph on General Paralysis exhibited*].

I could go on and weary you with illustrations. I could point out to you that by selections of patients in lunatic asylums most valuable records showing the *types* of insanity have been collected, and there is little doubt that by diligent study of these and other "types" a broad foundation is being laid towards a classification of cases far superior to those hitherto available. Another step in a somewhat similar direction is being made by the Anthropological Society, who are endeavouring to collect photographs of the typical races of the British Empire.

I will not trespass longer on your attention, although these matters may well deserve special attention on some future occasion; but I hope the instances I have adduced are sufficient to show you that this beautiful and fascinating art not only subserves to the amusement of its

disciples, but that it has a far higher aim in the infinitude of its applications, and we may have the high satisfaction of knowing that, amateurs as we are, it is to amateurs that most of the improvements and discoveries of photography are due, and that there is not one of us who, practising it with the simple qualifications of readiness to learn and equal readiness to teach, but must add at least one stone to the magnificent structure built for us by our predecessors.

THE METRIC SYSTEM.

BY HENRY M. MINTIRE, M.E., A.C.

THE base of the system, the metre, was intended to be one ten-millionth part of a quadrant of the earth's circumference. The true length is preserved upon a platinum bar, the original of which is kept in the archives of the French Government. This is divided into tenths, hundredths, and thousandths, each grade being indicated by prefixing to metre either *deci*, *centi*, or *milli*, as the case may be. It is increased, also, on grades of ten, one hundred, one thousand, and ten thousand, these being indicated by the prefixes *deca*, *hecto*, *kilo*, and *myria*. A square, whose side measures one-tenth of a metre or decimetre, was taken as the unit for the measuring surface, and called an *are*; this was divided and increased in various grades by ten, in the same way as the metre, and named in the same way. A cube whose edge measures one metre was taken as the unit of solids, called a *stere*, and treated in the same way as the *metre* and *are*. A hollow tube, whose inner edges measure one decimetre was taken as the unit for measuring liquids, and called a *litre*. The weight in a vacuum of the amount of water which would just fill a hollow tube, whose edge measures one centimetre, when at its greatest density (at 40° Cent. or 39.2° Fahr.), is taken as the unit of weight and called a *gram*. All this is well known, and shows how nicely the entire system is built up from the unit of length. Its greatest fault is not so much its fault as its misfortune. The greatest objection has not so much to do with any inherent failure of the system as with difficulty in its introduction. In France and Germany this has been accomplished; also, in the whole scientific world; but in the practical, the case is different. Unfortunately or fortunately, photography, like Mr. Gradgrind, being "eminently practical," has never (in this country) felt the benefits of the system. But the benefits never having been experienced, the loss is not known. One source of inconvenience, however, continually arises. The metric system being in use by many photographers on the other side of the Atlantic, their formulæ are given in this system, and on account of this the difficulty arises. There are two ways of avoiding it, however: either to make use of the metric system, or by multiplication and division convert that system into your own. Let us glance at each of these, beginning with the better, more sensible, and easier—by making use of the metric system.

The actual using of the system is not as difficult to obtain as is generally supposed. It, however, resembles a foreign language in one respect. A person, to use it fluently, must, so to speak, think in it. That is, thus, for example, a person learning German will never become proficient as long as he expresses what he wishes to say in English, and with a dictionary in his right hand and a grammar in his left does it into German; but he must think and express his thoughts in the German with no reference to his mother tongue. So in the metric system if a person wishes to obtain an idea of, say the amount of ten litres, and to do so first thinks that one litre is about nine-tenths of a quart, hence ten litres are about nine quarts, and thus obtains his idea, will never succeed. On the metric system, he must think of a litre as a litre, with no reference to anything else. And this is the easiest thing in the world to do. If a person arms himself with a metric rule, a set of gram weights, a litre measure, and a centigrade thermometer, without any trouble, and almost before he knows it, he will have the metric system at his

finger ends. The entire system, as mentioned in brief above, and as generally learned, is scarcely ever met with; though, for example, one will hardly ever see the *are* or *stere* mentioned; but for square measure, square metres (S. M.) or fractions of them, are generally used; and for solid measure, cubic metres (C. M.). The litre is often used, but fractions of it are generally expressed in cubic centimetres (C. C. or C. C. M.) of which it will be remembered that it takes one thousand to make a litre. But if, on the other hand, a person wishes to convert the metric to our system, he can easily do so by multiplying the metre by 39.37, which will give him the result in inches; the gram by 15.4, which will give grains; the litre by 0.9, which will give quarts; the cubic centimetre by .035, which will give fluid ounces. Of these methods, the former is always to be recommended. A set of gram weights, a litre measure (or a 500, 250, 100, 50, or 40 cubic centimetric measure, as one may wish and care to pay for), and a metric rule, are all cheap, and easily obtained. Then, all trouble of multiplying and dividing, and all chances of error from so doing, are avoided.

There is no trouble to learn to use them; a person who can use any weights and measures, can certainly use these. Then, without trouble, or even thought of it, he learns the metric system perfectly.

One other thing—he is helping along a good cause; he is making the universal use of this system a consummation of the near future; for, although no one at present living may live to see it, "it's coming yet for a' that, that man to man, the world o'er, shall 'use the metric system for a' that." The period of transition is the one of trouble. Still, if met fairly and squarely, the worst is soon over.

The initiative has been made, and the good work will be slowly carried on. . . . Blessed will that man be who will have a vivid idea of the length of a metre, and a slight and indefinite opinion in regard to the yard.—*Practical Photographer Almanac*.

REACTIONS OF THE CHROMIUM ACIDS AND CHROMATES ON ORGANIC BODIES.

BY DR. J. M. EDER.*

As regards the use of *albumen* in chromate photography, the author points out that an aqueous solution of that substance is coagulated by chromic acid, but with potassium bichromate a chrome alum undergoes no change. Albumenized paper, rendered insoluble by heat or by alcohol, has often been employed as transfer paper instead of gelatinic paper made insoluble by alum. Photo-lithographic transfer paper is also sometimes coated with coagulated albumen before it is covered with the regular sensitive film. The albumino-chromate is very sensitive to light, though not in so high a degree as gelatino-chromate; it turns brown on exposure, and becomes insoluble in water. A sheet of paper coated with albumino-chromate, exposed under a negative, and then blackened with printer's ink, turns white in the parts not acted on by light when treated with water.

For photographic purposes, albumen freshly prepared from hens' eggs is the best; but when economy and convenience are objects, the commercial solid albumen may be used with advantage. As a guide, the author lays down that an egg contains about twenty-five grammes of white, and seventeen grammes of yolk. To obtain from solid albumen a fluid of the same kind as the fresh white of an egg, one part of weight of that substance must be dissolved in from six to eight parts of water. Unfortunately, commercial albumen is often adulterated with gum and dextrine, which are not easily detected, as they dissolve in water. If, however, the percentage of these substances be small, they will not injuriously affect the photographic process. The best analytical process for testing albumen is to mix a twenty per cent. solution of that substance with an equally concentrated boiling solu-

* Concluded from p. 101.

tion of alum, and to filter and weigh the precipitate. An albumen which leaves only a small residue can be used for photography without hesitation. Pure albumen obtained from blood, which is often sold in the solid state, can be used without disadvantage, either mixed with white of egg or alone.

Chromated albumen, after exposure, is more resistant than gum-arabic, and films of the same substance possess the advantage over gelatine of being developable in cold water, on which account they are employed by preference for transfer papers. Photo-lithographic transfer papers prepared with gelatino-chromate do not give such fine, clean pictures on the stone as those prepared with albumen. But a mixture of albumen and potassium bichromate cannot be used for thicker films on glass, as it cracks in drying. Albumen sensitized with a chromate becomes spontaneously insoluble after lying for a few days in the dark; a paper prepared with albumino-chromate cannot be depended on except when recently made. An aqueous solution of albumen mixed with one of the double chromates of ammonium and potassium remains for a long time sensitive to light, provided it be kept in the dark and protected from decomposition by a few drops of carbolic acid. Solid albumen dissolves very quickly in a concentrated solution of ammonium chromate, and albumenized paper that is to be sensitized in such a solution must be floated film upwards on the bath; in this respect the albumen paper is made more delicate than gelatine paper.

In the collotype process, when a substratum is required, it is usual to make it of a mixture of gelatine and albumen, in order to cause the upper film to adhere to the glass; but the actual printing layer of colloid ought not to contain albumen, as the addition of that substance makes it less capable of resistance to mechanical pressure. Gelatine to which albumen has been added is less soluble in water, and the mixture is now not so much employed as formerly. The action of light on a mixture of albumen and potassium bichromate can scarcely be exclusively referred to a secondary action of chromium oxide, for the latter does not render albumen insoluble. It is probable that in this case the production of the image depends on a higher degree of oxidation of the albumen (there are numerous instances of derivatives of this kind) in combination either with chromium oxide or with the albumen itself; more approximately correct analytical details can hardly be obtained, considering the very complicated composition of albumen.

Glycerine is much used as an adjunct in chromate photography. This substance, when sensitized with potassium bichromate, turns brown on exposure to light, but loses some of its stickiness. It can be used for the carbon process, but the pictures produced are not nearly so permanent as those in gelatine. No use is therefore made of the sensitiveness to light of glycerino-chromate, especially as it is very slight in comparison with that of gelatino-chromate—so much so that in a mixture of gelatine, glycerine, and chromate, the second of these substances remains unchanged, and appears to act only mechanically. On the other hand, advantage is greatly taken of the property which glycerine possesses of rendering gelatine flexible and elastic. Printer's rollers are made of such a mixture; glycerine is added to gelatine to make elastic the pellicles for removing collodion from glass plates, and to increase the flexibility and solubility of the gelatine film of carbon paper. The addition of glycerine in the case of carbon paper is not, however, adopted by all photographers, for it tends to make the film too soluble, so that it will melt when the temperature is at all high, and it gives harder pictures than when soap or sugar is mixed with the gelatine.

Glycerine has been used in the dusting-on process to increase the hygroscopic quality of gum-arabic. A dilute solution in water is also recommended for wetting collotype plates before rolling. This solution does not soon dry, and in hot weather increases the hardness and durability of the gelatine layer. A mixture of diluted glycerine

and soluble salts is used for keeping moist collotype plates under the steam press. Some authorities suggest the addition of glycerine to photo-lithographic transfer paper, and also to photo-collotype plates, which are developed cold by acetic acid. The author disapproves of glycerine as an adjunct to the gelatine layer of a collotype plate, because it renders the latter brittle. In photo-electrotype he found its employment advantageous, because it increases the solubility of the gelatine, and promotes the complete development of the image in hot water. He prefers, however, cane sugar, for it permits the film to dry quicker, is still more favourable to development, and brings out better all the fine lines. It must be borne in mind that a gelatine containing too large a proportion of glycerine will be no longer sensitive.

The author next describes his experiments with casein. He obtained a solution of that substance in ammonia, sensitized it with potassium bichromate, and coated a plate with it. On exposure, the film turned brown, but the image was developed with difficulty. The incompleteness of the development and the defectiveness of the image convinced him that casein could not be used with effect in chromate photography. For coating transfer paper for carbon printing, an ammoniacal solution of casein may be used with advantage; but, in the opinion of the author, transfer paper of this kind is not likely to supersede the more convenient methods now in use. The employment of a mixture of starch and chromate in the preparation of photo-lithographic transfer paper has also been recommended, but has met with no adherents.

With regard to the resins, the properties of which the author also investigated, he found the only ones at all suited for experimental purposes to be colophony or common resin and shellac. Of the first of these he obtained a solution in ammonia, added potassium bichromate to it, and let it evaporate in the dark on a glass plate, so as to produce a film. This film, which was very uneven, he then exposed to the light under the negative of a linear drawing. No change was visible in the film even after the lapse of some days, and developing with dilute solution of ammonia or spirits of wine dissolved the whole film, so that no image was produced. This experiment tends to prove that the resins alone are of no kind of use for chromate photography; but, mixed with other substances that are sensitive to light, they can be used to some advantage. A small quantity of resin introduced into the gelatino-chromate tends to make the latter less easily soluble, and the addition of an alcoholic solution of resin to the gelatine in the collotype process renders the plate better able to withstand mechanical pressure. However, at the present time, such adjuncts to collotypes as gelatine are no longer employed, as the same effect can be obtained by simpler means.

The author concludes his very exhaustive treatise in the following words:—"In the above-described investigation on the reaction of the chromates in relation to photography, I have dealt first of all and at greatest length with gelatine. In this I was guided no less by the conviction that that substance is the most important in this relation, than by the fact that with it the reactions are the most complicated, while, at the same time, the peculiarities that characterize it are common also to gum, albumen, and other substances of the same kind. The course of the chemical reactions is not subject to any great vicissitude, but the intensity of the action of the chromates on different organic bodies depends much on the nature of the surrounding circumstances; the phenomena of reduction often make their appearance undesirable in degree, and at unseasonable times. Only an accurate knowledge of all these emergencies will place chromate photography in the position of a reliable process; a rational insight into the essence of the method must enlarge its sphere of action, and then the chromate processes will inaugurate for photography a new era, in which they will maintain a brilliant position."

The Photographic News.

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IN MEMORIAM—R. T. CRAWSHAY.

WE record with deep regret the death of a gentleman who held a very high position in the ranks of amateur photographers—Mr. Robert Thompson Crawshaw, of Cyfarthfa Castle, Glamorganshire, who died on Saturday at Cheltenham. Mr. Crawshaw was for many years an enthusiastic and successful amateur photographer, his portrait and genre studies being very familiar for many years past in the Exhibitions of the Photographic Society. A few years ago he became impressed with the idea that large or life-size portraiture had never received sufficient attention amongst photographers. He ordered specially constructed lenses of Mr. Dallmeyer for producing such portraits direct, and devoted his attention to such work with considerable success. He then offered a series of prizes for the best life-size pictures, both enlargements and from negatives produced direct, the competing pictures being hung in the Photographic Society's exhibition. In subsequent years he offered further munificent prizes as encouragement to specific effort in photography. During the last few years his own contributions to the Photographic Exhibition have consisted chiefly of landscapes, their pictorial excellence generally placing them amongst the most artistic pictures exhibited.

For many years photography was to Mr. Crawshaw a solace in the isolation produced by total deafness. He pursued his favourite occupation with equal earnestness and fine taste, producing as much good work as many a successful professional photographer working hard for commercial purposes. Although debarred by his unfortunate aural disabilities from attending photographic meetings or taking part in the public life of the photographic community, Mr. Crawshaw was interested in its movements, and for many years past entertained every spring as guests a number of the most distinguished amongst photographers.

As a public man, Mr. Crawshaw was commonly known as the "Iron King" of Wales, being the proprietor of the immense iron works at Cyfarthfa, where, for upwards of a quarter of a century, he held a kindly, patriarchal sway, the rupture of which by the great strike in South Wales was a grief rather than a pecuniary loss to him, as some of his works had for some time been kept open at a loss rather than dismiss his men. During the last two or three years Mr. Crawshaw's health has been failing, and his death on Saturday removes him in his sixty-third year.

REFORM IN WEIGHTS AND MEASURES.

On the first day of the present year an Act of Parliament came into force giving legitimacy to what is known as the metric system of weights and measures. This legiti-

macy did not enforce the system, but gave a permissive sanction to its use: sales made by such a system instead of what is known as "imperial" measurement became legal. Amongst scientific men the superiority of the metric system has long been acknowledged, but custom and prejudice are strong, and very many years will probably elapse before the change is effected in this country. In France, where it originated, it was one of the outcomes of a complete convulsion, rather than the result of a deliberate estimate of its superiority.

In the terrible upheaval of the framework not only of government, but of social life, which occurred at the French Revolution, there was an insane desire to change everything which had an established existence. A system of weights and measures which had existed under sanction of government must be bad, and must be superseded. Fortunately the system devised was not characterized by the insanity of the period; and the metric system, a plan simple and symmetrical, was devised and adopted. It has become the system of science all over the world, and is worth a little trouble to comprehend and use. All the formulæ which reach us from Continental *savans* are stated in metrical terms, which terms should be commonly understood and used by photographers. It is not an uncommon thing for us to receive requests from correspondents asking for the translation of some special formula from metrical to imperial terms. It has been also not unfrequently suggested to us that in giving articles and formulæ from Continental journals, we should reduce the metrical terms of the writers to the common terms of imperial weight and measure used in this country. We have, for many reasons which we have explained, and which it is not now necessary to repeat, held it to be wiser to repeat such formulæ in the terms of the original authors, leaving the reader to work it into his own figures. By constant repetition in our pages it becomes familiar to readers, and any trouble incident upon novelty and strangeness soon disappears. A curious illustration of the wisdom of the course we elected to follow, from another point of view, has just come under our attention. The translation and reproduction of articles from foreign journals is at times effected under pressure. If an interesting novelty appears it is translated, and reproduced without delay. In change of the denomination of figures, effected in haste, there is much liability to error. A case in point occurs. In a recent American translation of the kind, the metrical terminology is changed into the familiar figures, and in every quantity there is more or less of error, in some cases to a very serious extent, altogether invalidating the formulæ. Of course such error is not readily excusable; but the conditions render it possible, and may as well be avoided. If the reader have the original terms to refer to, if he have made a blunder in modifying quantities, he can easily correct himself. This is but one trilling addition to various good reasons why photographers should become familiar with the system used by scientific men all over the world. On another page we reprint from an American contemporary an interesting article on the subject to which we commend attention, and we append some tables for conversion of metric into imperial terms.

Measures of Length.

Metric Denominations and Values.	Metres.	Equivalents in Imperial Denominations.			
		Miles.	Yards.	Feet.	Ins. Decs.
Myriametre	10,000	{	6	376	0
			or 10,936	0	11.9
Kilometre	1,000	—	1,093	1	10.79
Hectometre	100	—	109	1	1.079
Dekametre	10	—	10	2	9.7079
Metre	1	—	1	0	3.708
Decimetre	1-10th	—	—	—	3.9371
Centimetre	1-100th	—	—	—	0.3937
Millimetre	1-1000th	—	—	—	0.0394

Metric Denominations and Values.	Weights.		Equivalents in Imperial Denominations.					
	Grammes.	Cwts.	Sts.	Lbs.	Ozs.	Drs.	Decs.	
Millier	1,000,000	19	5	6	9	15	04	
Quintal	100,000	1	7	10	7	6	304	
Myriagramme ...	10,000	—	1	8	0	11	8304	
Kilogramme ...	1,000	{ (or 15432·3487 grains)						
Hectogramme ...	100	—	—	—	3	8	4383	
Dekagramme ...	10	—	—	—	—	5	6438	
Gramme	1	—	—	—	—	0	56438	
Decigramme.....	1-10th	—	—	—	—	0	056438	
Centigramme ...	1-100th	—	—	—	—	0	0056438	
Milligramme ...	1-1000th	—	—	—	—	0	00056438	

Metric Denominations and Values.	Measures of Capacity.		Equivalents in Imperial Denominations.					
	Cub. Metres.	Qts.	Bsh.	Pks.	Gls.	Qts.	Pts.	Decs.
Kilolitre, i.e. 1,000 Litres	1	3	3	2	0	0	0	77
Hectolitre, i.e. 100 Litres	1-10th	—	2	3	0	0	0	77
Dekalitre, i.e. 10 Litres	1-100th	—	—	1	0	0	1	6077
Litre	1-1000th	—	—	—	—	—	1	76077
Decilitre, i.e. 1-10th Litre	1-10000th	—	—	—	—	—	0	176077
Centilitre, i.e. 1- 100th Litre	1-100000th	—	—	—	—	—	0	0176077

PHOTOGRAPHY AT THE ROYAL CORNWALL POLYTECHNIC SOCIETY.

THE forty-seventh Annual Exhibition in connection with this Society will be held at Falmouth in August next, opening on Tuesday, the twenty-sixth of that month. Prizes are offered to photographers for landscapes, for portraits, for portraits untouched, for composition pictures, for instantaneous pictures, for dry plate pictures, for pictures by improved processes, for enlargements.

Medals are offered also for improved apparatus and appliances, including magic lantern work.

All exhibits must be accompanied by a written explanation of their specialities.

Intending contributors desiring information regarding the photographic department may obtain details by applying to Mr. W. Brooks, of Warren Road, Reigate, who, being greatly interested in this exhibition, has kindly undertaken to aid the photographic department. We subjoin an extract from the programme:—

MEDALS AND PRIZES.

REGULATIONS FOR COMPETITION, ETC.

Competitors are divided into four classes.

1.—The First Class consists of members of the Society; also of persons who pay 3s. to be allowed to compete for prizes. First Class competitors are entitled to admission on the first day of the Exhibition, after twelve o'clock.

2.—The Second Class consists of persons of the working order.

3.—The Third Class consists of schools for the higher branches of education.

4.—The Fourth Class consists of schools for the children of the working orders.

5.—The Second, Third, and Fourth Classes may compete for Prizes without any subscription, but are not entitled to free admission to the Exhibition.

6.—No person shall be entitled to a prize for any article which has appeared at a previous Exhibition of the Society, unless exhibiting some improvement.

7.—In the Department of Fine Arts, Professional and Amateur Artists must state whether their productions are original or copies.

8.—The Judges are empowered to award Prizes in money to the extent of £1 only, except in the case of Special Premiums. When medals are awarded, the converting them into money,

according to the following scale, shall be at the discretion of the Committee:—

First silver medal	£5	0	0
Second ditto	3	10	0
First bronze medal	2	0	0
Second ditto	1	5	0

9.—Medals only (not convertible into money) can be awarded to patented or registered articles.

10.—No competitor may receive more than one medal or prize in the same department in the same Exhibition. (This regulation does not apply to mechanical or scientific inventions, or to photography.)

11.—No holder of a medal or prize may receive a prize of the same or a lower value for similar subjects in the same department at the next two subsequent Exhibitions; but the Judges will be empowered to give certificates of merit to persons excluded by this rule.

12.—The carriage of all articles sent to the Exhibition must be prepaid, unless permission to the contrary has been previously obtained from the Secretary. Pictures and other works of art may, however, be sent free under certain regulations to be learnt of the Secretary.

13.—All awards are at the discretion of the Judges, and none will be made if no article be deemed of sufficient merit.

14.—All articles intended for exhibition must be delivered at the Polytechnic Hall, Falmouth, one week before the opening of the Exhibition, or they will not be eligible for competition.

15.—No article exhibited can be removed from the Hall, before the close of the Exhibition, without the consent of the Secretary.

16.—The Society is not responsible for loss of, or injury to, any article sent for exhibition.

* * Information respecting the Society and the Exhibition, and forms to be filled up by the exhibitors, may be obtained from the Secretary, EDWARD KITTO, Polytechnic Hall, Falmouth. Information respecting the Art Union may be obtained from the Honorary Secretary, R. J. BEVIL SHARPE, Falmouth.

FRENCH CORRESPONDENCE.

FIRST GENERAL MEETING OF THE PHOTOGRAPHIC UNION OF FRANCE—APPLICATION OF THE PAPIER-ARTIGUE TO IMPRESSIONS IN FATTY INKS—PROCESS OF M. GERMEUIL-BONNAUD—THE MONUMENT TO NICEPHORE NIEPCE—PROPOSAL FOR A MONUMENT TO DAGUERRE.

First General Meeting of the Photographic Union of France.—The first general meeting of the Union Photographique de la France was held on Wednesday, the 7th of May last. A report was read by the chairman on the details of the organization of the Society. The numerous and important questions raised by these details had compelled the committee to call the meeting a month later than had been at first intended. Henceforward it was hoped the regular meetings of the Union will be held on the first Wednesday in each quarter, in accordance with the terms of the statutes of the Society. In announcing the names of those who had joined the Union, the executive committee urged strongly upon all the members who had not sent in their admission certificate to do so without delay. Of the foreign members who had already been admitted members of the Society, the announcement of two names was received with every sign of lively satisfaction; they were those of M. Carlos Relvas, of Gollega, in Portugal, and of M. Lewitzsky, of St. Petersburg. The applause with which these names were received was perfectly well-deserved. M. Carlos Relvas is an eminent amateur, who has not only produced important works in all the different branches of photography, but has on every occasion given evidence of his hearty and generous co-operation with all institutions which have for object the development and progress of our art. M. Lewitzsky is a skilful operator who distinguished himself by the position he took up when Vice-President of the Jury at the last International Exhibition at Paris; he is also a photographer in special favour with all his fellow-workers. It will be recollected that the Photographic Union of France, when it was first constituted, presented

him with a congratulatory address (see PHOTOGRAPHIC NEWS for the 28th February, page 102). M. Lewitzky has replied to this address in a letter full of feeling and sincerity. He informs the young Association that his report on the late Exhibition is in the press; if, after having read this report, the members confirm their address, he shall regard their good wishes in the light of a great honour, and more especially of a moral support of the opinions which he defends. "The first part of my report," M. Lewitzky says in this letter, "treats of the negative processes, particularly in portraiture. It contains a reiterated avowal of my profession of faith, which, unfortunately, was not found to be in accord with the decisions of the jury. I do not protest, for all deprecation is now useless and might be misunderstood; but I reassert the variations, and confirm the mistakes, that were made, as well as point out their cause. It is the entire absence of any principle on which the decision ought to be founded that made the awards appear arbitrary, and tends to render photography the laughing-stock among the professed arts. My aim was and is to bring photography into harmony with art, to save it from the state of decay into which it has fallen in France, thanks to a spurious patronage which seeks to divorce it from art, and for private purposes to completely dominate it. It is not in France, the home of the beautiful, the true, and the just, that so pitiful a rôle as this should be permitted to be played." Of course these eloquent words were received with the greatest applause by a body of men whose ideas they so well expressed.

Application of the Papier Artique to Printing with Fatty Inks.—On the agenda paper of the same meeting were entered several new inventions to be submitted to the Society; among them the *Chromographe*, the apparatus for working the process *Polychrom-autographique*, by M. Holtzmann, of Paris, and the method of reproduction by means of a layer of aniline, by M. Bauer, of Vienna, all of which I have already described for the benefit of the readers of the PHOTOGRAPHIC NEWS. M. Artigue showed some of the results obtained with the paper of his invention, and gave a most interesting account of an application of it to his system of photo-tracing. He passed round some specimens which show that a negative obtained from his special ink and sensitized paper can be used for transferring to zinc or stone to serve as a printing surface with fatty inks. As the inventor has not yet taken out a patent for his discovery, he was unable to explain the process, but he promised to make it known to those who applied to him for the special fittings required for working it.

Process of M. Germeuil-Bonnaud.—The meeting was also attended by M. Pellet, who communicated the results of the last improvements that he has introduced into his *Cyanofé* paper, and by M. Germeuil-Bonnaud, who exhibited to his fellow-members numerous samples of his photography in colours. It is no easy matter to obtain for a new photographic process the unanimous approval of a meeting exclusively composed of professional photographers, who are generally sceptical in the matter of the difficult question of colours. M. Germeuil-Bonnaud submitted some admirable reproductions in portraiture and landscape, as well as of flower painting and art objects. He was congratulated on all sides, and it was generally acknowledged that up to the present no more genuine or valuable means of obtaining colours in photographs had been introduced to public notice, *en attendant* the long-desired moment when they shall be produced directly in the camera.

Monument to Nicéphore Niepce.—The next subject on the agenda paper of this meeting was the question of a subscription in aid of a statue of Nicéphore Niepce. On this subject there arose a most interesting discussion, in the course of which the following points were very clearly established:—1. That the memory of Nicéphore Niepce is incontestably entitled to a monument; 2. That the com-

mittee at Chalons, the cradle of Niepce, to whom the proposal for a subscription is due, had gone out of the way to insult the memory of Daguerre; 3. That a statue of Daguerre ought also to be erected at Honfleur. The discussion, while bringing out plainly the feelings of sympathy with which the members of the Photographic Union of France welcomed the proposal for raising a memorial in honour of Niepce, nevertheless accentuated the inopportune and reckless partiality of the Chalons committee. This committee was extremely ill-advised to imagine that the success of its appeal depended on the amount of discredit that could be thrown on the merits of Daguerre. Great astonishment was expressed at this meeting of the Union that, although the appeal has now been for nearly a year before the public, no voice has yet been raised in protest against such an unfair and almost unprecedented procedure. In fact, it has never before this been pretended that in order to erect one monument it is absolutely necessary to pull down another. The party spirit manifested against Daguerre, who has never hitherto, so far as I know, been accused of being a usurper, was universally disapproved; and the inauspicious appeal, showing so plainly a petty provincial spirit, did not meet with a single advocate at the Photographic Union of France. It was asked why Nicéphore Niepce should have taken Daguerre as a partner if his assistance were not indispensable. There can be no doubt that Niepce was the first to hit on the idea of bending light to his service, but he has himself acknowledged that without the aid of Daguerre he would never have realized a success with the bitumen of Judæa alone, which formed the groundwork of his invention. Besides, as is well known, in every age there are men occupied simultaneously in working out an application of the same phenomenon. Often they have published the results of inquiries at the same moment; and at each time a great discovery has amazed the world, more than one inventor starts up and claims priority in it. The reason is that the discovery which meets a general want has long been sought for, and was, for some time, so to say, "in the air." This was undoubtedly the case with photography; but why, then, is it necessary, under the pretence of appealing for subscriptions, to draw up a bill of indictment like the following:—"Time has silenced the falsehood, born of an intrigue, which retarded the apotheosis of Niepce. Possessing the modesty and disinterestedness natural to real worth, when he had discovered the principles of his invention, he still hesitated, conscientiously, to publish it, and to claim the merit for himself, while in its original imperfect state. He waited to perfect it before divulging it, and he was working at it with his habitual patience when death overtook him. Then it was that an artist, the manager of a diorama, who, three years previously, had got scent of Niepce's work, and robbed him of the secret of his process, who since that time had been connected with him in the name of partner, and had been occupied in perfecting the secondary details of the process, astutely claimed for this subordinate work the merit of a recondit investigation, resulting in a personal discovery. . . . These are the very words which the committee of Chalons-sur-Saône do not hesitate to employ. By what right, it is asked, do they pronounce so severe a judgment, before any one has made a charge against the accused? Where is the evidence and where the *corpus delicti* on which he is condemned? Why do you constitute yourselves a court of honour before any one has asked you to undertake that office? You wish to get a statue, but you could surely obtain it without distorting history after your own fashion. It is true the committee are able to produce a deed of partnership entered into between Daguerre and Niepce in the month of March, 1830, and according to them this is quite enough to convict the former. But the first paragraph of this deed suffices to overthrow the charge: here it is:—"Article 1.—A partnership is hereby established between MM. Niepce and Daguerre,

under the commercial title of Niepce and Daguerre, for working out the said invention, which has been invented by M. Niepce and improved by M. Daguerre." It is possible that Daguerre was in the wrong to give his own name alone to the process of Daguerreotype, but it will be acknowledged that it would have been impossible to combine the two names; "Niepce-Daguerreotype" would have grated still more harshly on the ear. Then, again, why did not Niepce's son, who continued in partnership with Daguerre after his father's death, complain of the name given to the invention, and protest against the robbery? Listen to what the Chalons committee say on this point:—"The son, when he authorised the partner of his late father to claim the merit of the discovery for himself, was bound by an agreement wrung from him by his indignance, both material and mental." But to call Daguerre "the parasite of Niepce's genius" is hardly the way to prove the charge of having usurped a title which Niepce's heir had sanctioned.

Proposal for a Monument to Daguerre.—All these points were fully discussed at the meeting, and the discussion was illustrated by many anecdotes of both inventors. It concluded with a motion protesting against the terms of the Niepce committee's circular, and that a letter be written to the municipality of Honfleur, Daguerre's birthplace, asking them to raise a subscription for a monument to Daguerre. This proposition was unanimously carried amidst the applause of the meeting. With this action of the Photographic Union everyone will no doubt be satisfied—with the exception, perhaps, of the Chalons committee, who can scarcely be expected to express their gratification. Historic truth will be vindicated, or rather will be found to be capable of making itself respected; tardy justice will be done to the memory of an eminent inventor, at the same time that a like honour is conferred on one without whom the invention would have been incomplete; and the century which witnessed their birth will render a glorious and worthy homage on equal terms to the two men to whom science is indebted for one of the most beautiful and fruitful discoveries of modern times. K. VERSNAEYEN.

PHOTOGRAPHY IN SWITZERLAND.

BY ADOLPHE OTT.

In the land of William Tell, photography is yet entirely in the hands of the profession; and although our alpine world would afford splendid occasions to the tourist, to take views of regions hitherto unknown to the public, I am not acquainted with a single native amateur photographer of whom you have so many distinguished representatives in your island. Why this is so, I am not perfectly able to answer. Some will tell you that we are too practical a people; but I believe that the reason for the fact in question is about the same as that which causes people in the tropics not to lay out gardens; that is, we see no need to get pictures of the scenery that surrounds us, or which we can reach and admire in a few hours.

Still, we have an excellent stock of professional men; and if you will allow me, Mr. Editor, I shall take a short review of the art in my home, and give you an idea of what we are doing.

I begin with Mr. Ganz, in Zurich, a gentleman who is, perhaps, not quite unknown to many of your readers, for he is the same who obtained medals at the London International Exhibition of 1873, and of the Exhibition of the Edinburgh Photographic Society of 1877. Mr. Ganz has devoted himself especially to the making of transparencies for the magic lantern, so much in vogue in your country; and I must say that his collection, which he is constantly increasing, is at present not only one of the most instructive, but also one of the most complete existing. The series thus far arranged include anatomy (human and comparative anatomy, histology, embryology, &c.), zoology (types of the animal kingdom), botany

(including pharmaceutical plants—useful, injurious, and suspicious fungi), forestry, geology (including prehistoric animals), physics, natural phenomena, meteorology, and astronomy. These series have been to a great part executed after drawings prepared especially by the university professors of this city. They are all carbon prints, and mostly coloured.

In connection with the art of projecting, it may not be without interest to you to know that there exists a very fine treatise in German, by Emil Stöhrer, entitled *Die Projection Physikalischer Experimente und Naturwissenschaftlicher Photogramme*, Leipzig, 1876, which gives a detailed and illustrated description for producing experiments in the domain of physics or natural history by means of the magic lantern.

Next, I have to call attention to the photographs of Messrs. Jeau Gut and Co., also of this city, who are just preparing the first collection of subjects belonging to the past art industry of this country. It exceeds mostly in forged iron-work, such as gates, balconies (in lattice work), balustrades, and door-garishments. These objects date from the sixteenth, seventeenth, and eighteenth centuries; but this art has now disappeared. The collection includes also wood-carvings, statuary, and architectural work, and it is intended to make it as complete as possible. It is a pity that we have no central art museum for the instruction of the artisan.

Photo-zincography is practised by a firm in Zurich, and colotype printing by another in Winterthur.

Near the city, on the borders of the lake, we find the establishment of Dr. Richard, who formerly has given great attention to carbon printing, and has even gone so far as to introduce steam in this process, which he executed on a large scale, like Brann in Dornach. At present he does, however, little in this direction. The only carbon workers in Switzerland, besides him, are the brothers Tschler in St. Gall, and Mr. Tschler-Siguer in Basle. These gentlemen are very fine portraitists, and, in my opinion, outdo everybody else in Switzerland.

In Geneva we meet the excellent landscape workers Messrs. Charnaux and Jarcin, well known for their excellent views of the valley of Chamounix. The latter tried to introduce the Woodbury process for landscapes, but has given it up, because, as he says, Woodburytype will never give the clearness of the sky and water and the perspective, such as the silver process will yield, and I think he is not quite so much in the wrong. Besides these, almost every photographer in the mountains takes now views of landscapes, but I do not know of any one excelling. Dry plates and gelatine emulsion are almost unknown, only a photographer of this city has lately given attention to gelatine emulsion, and, as I hear, with decided success. He used English plates.

With regard to portrait work in general, I think that Messrs. Tschler can compete with the best artists on the Continent, and Mr. Ganz makes use of the Vander Weyde process with success. The majority produce satisfactory work; still, everybody feels the "hard times," and but few have courage enough to try something new. If some of your English brethren should come to our little country this summer, I would recommend them to direct themselves to the canton of Grisons (Graubünden), which is yet the least done up. Generally speaking, the views of Mr. England and Mr. Frith are much in demand. The prices of living are now very moderate, 10 frs. being the utmost one gives for full board in the best hotel, and during the season. We invite you all cordially to come.

Hottingen, near Zurich.

WANTED TO HAVE HER PICTURE TAKEN.

[The following bit of mingled humour and pathos, from an American contemporary, furnishes some pleasant suggestions as to the amount of domestic happiness photography has contributed to.]

They had come to town to sell a waggon load of potatoes and buy a stove for the front room. After finding a market for the vegetables they were driving along in their rattle-down, crazy-going waggon, looking for a stove sign, when the old woman spoke up timidly:

"Mrs. Craigler was telling me there was a place down here somewhere where I could get four pictures for twenty cents."

The grum and grim old granger gee'd the team to get out of the way of an approaching street-car, and turning half way round in his seat on the board across the waggon-box looked the old lady squarely in the face, and with a jerking motion of the jaws, demanded:

"Picters o' what?"

"Why, of anybody—of me," responded the frightened female, with a faint little voice that would never do for city life.

"Whew! Woman, are you going clear, dead gone crazy? In the name of grasshoppers an' garter snakes what be you thinkin' of, anyway? Put that old, dried up, molasses-coloured face of your'n in a picter? Git out! Do you want to scare people to death, or bring disgrace on the pictertaking business? And do you suppose that any man with the least bit o' shop pride about him would ever let a picter o' your'n go outen his shebaug with his own name outo' it? Nary time. By all the stumps in Wilkin's lot! woman, what do you want with picters anyway, at your time of life? Wasting money, too, when we need so many things a precious site was than we do nonsense like that."

The old lady coloured up and looked as though she had committed some mortal offence, as she said with much hesitation:

"I didn't mean to have you waste money on me, father, but I never had a picter took in all my life, for when I was young and would a' looked better in a frame, maybe, nobody knowed anything about such things then, an' allus afterwards the prices has been so much that I didn't think it worth while; but now since they've got 'em down to five cents apiece, I think maybe we could afford it, and I kinder thought I would like to give each of the children one for Christmas, for although I know I am not handsome, still I am mother, and when I am gone, father, don't you think it might be a little comfort to 'em to tell a little how I looked, and show their little ones; an' father, I did so hope that you wouldn't think it was foolish, and would go with me an' have our two selves took together, for it wouldn't cost any more, an' I know you would make a noble picter, father, an' I could look at it when you are away, an' it would be such a comfort to me, an' I wouldn't feel so lonesome. Do, father, please, humour me just this once, and I will try an' skrimp a little, an' save enough to make it up in a little while. Something tells me we may never have another chance, an' I would hate to have the time to come when you would be sorry—like we've been ever since poor Jimmy was took from us. You know, father, you've allus said you would give any money if you only had a picter of him as he looked before he took sick, the last time he came to town with you. Won't you, father, please?"

No longer was the farmer harsh and gruff. His eyes were moist with emotion her timid words had stirred within him, and a big tear gathered on his rough cheek and rolled slowly downward. Impulsively his arm reached out and clasped the waist of his plain old wife and gave it the biggest surprise in the shape of a squeeze known for many a day, though it was broad daylight, and hundreds of people were passing by.

"You're a trump, old woman, you are!" he cried with a loving softness in his tone. "And you shall have all the picters you want, and none o' your five cent thugnum-a-jiggers, either, but the very best they've got in the shop. Why, you will look twenty times better'n anything I ever saw on a show bill, and a gold frame wouldn't be an atom too good for you, but it's took me a good while to find it out."

Correspondence.

RAPID DRY PLATES FOR THE STUDIO.

DEAR SIR.—I, amongst very many others, read with pleasure of Mr. W. H. Nelson's accomplishing the very thing we all want, viz., to prepare our own gelatino-bromide emulsion, and also plates, with ease and certainty, and if Mr. W. H. Nelson would kindly publish his formula, or let us know where the gelatino-bromide emulsion can be obtained, he will be conferring on the body of photographers a very great boon at this time of perplexity between wet and dry. I must beg pardon for taking so great a liberty, but am sure, from the tenor of his letter, that Mr. W. H. Nelson will forgive me.—
Yours, &c.,
P. H. DAVIES.

March, Cambridge.

SIR,—I read in your impression of last week "A word of encouragement to all photographers who contemplate working the rapid gelatino-bromide dry process in the studio," and was much pleased to hear that the preparing of the plates was so simple and inexpensive. I should, as I feel sure a great many more of your readers also would, feel greatly obliged if that information, making the process so simple and reliable, could be communicated through your pages. Would, therefore, Mr. W. H. Nelson kindly give the readers of the News the benefit of his experience?

I have myself worked with the commercial dry plates for a few months, but have found them to vary in result, and to fail altogether too often.—Yours truly,
D. SMITH.

Sowerby Bridge, Yorks.

DEAR SIR,—The number of communications I have had from all parts of the Kingdom relative to the preparation and use of rapid dry plates for studio work show that professional photographers are beginning to take a deep interest in the matter; but as time will not permit my replying individually to all, will you kindly favour me with a corner to answer a few questions, and set some doubts at rest.

I am asked, "Are dry plates certain?" "Are they really practical for studio work?" "Are the results uniform?" "Do the plates keep?" "Are they not very slow in printing?" &c., &c.

Well, I can safely say they are absolutely certain, and thoroughly practical for studio work, much more so indeed, than collodion; their uniformity is far before collodion, as they are free from the constant change that is taking place in the relations of collodion and bath. To-day's dry plates are the same as yesterday's, and to-morrow's are the same as to-day's, and so on, always ready, always the same; no oyster-shell markings in warm weather, no comets, no pinholes, no fog; they keep well, but must be kept in a dry place, and free from deleterious vapours. Carefully kept, I have every reason to believe they are unalterable for years.

As to printing quality, all degrees of density are obtainable with gelatine, from the thinnest and most delicate negative, printing as quickly but more brilliantly than collodion plates of a similar class, to as dense and strong a negative as any one need ever wish for, these results being under the most complete control.

The development, so far from being troublesome, as some appear to think, is just the reverse, the negative being ready for fixing in twenty to thirty seconds after applying developer, intensification being very seldom necessary, and even then not more than ten seconds' work.

With regard to fixing, I may here mention, for the benefit of those beginning to use gelatine plates, that after removal from the hypo they should be fully washed without any delay, as the colour of the film is very much and very quickly injured by being left wet with any trace of hypo in it; to allow plates to dry in that state is of course

utter ruin. I must say that I never worked with such pleasure at my business as I have done since adopting gelatine dry plates, and I believe this will be the experience of every one else.

To meet the wishes of many correspondents, I may add that I have arranged to give practical instructions in gelatine work, as will be seen on reference to the advertising columns.—I remain, dear sir, yours, &c.,
Twickenham, S.W. W. H. NELSON.

Notes and Queries.

THE PERPLEXING BATH.

SIR,—A letter signed "Puzzled," which appeared in your last impression, reminds me of similar experience. The cause I traced to a bad sample of filtering paper. It may not be generally known that some samples of paper are quite unsuited for filtering silver solutions, and that the fibre of some paper contains wool, and is partly soluble in baths. I would recommend your correspondent to add a few grains of nitrate of baryta to his bath (say about two grains to each ounce of solution), and carefully filter through *French filtering paper* (that sold in packets and cut circular). He will also do well by using common alum in addition to the sulphate of iron, &c., in the developer, in about the same proportion as the iron.

I believe that if the above suggestions are strictly adhered to, your correspondent will be no longer puzzled.—I remain, yours,
ERUCA.

Proceedings of Societies.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting of this Society was held at the usual place of meeting, Museum, Queen's Road, on Wednesday, May 7th, Mr. WEBBER in the chair.

The minutes having been confirmed,

The Hon. SECRETARY produced a letter received from the Vienna Photographic Association.

Mr. Wood, of Bath, was unanimously elected an ordinary member.

The CHAIRMAN then called on Mr. Robert Biggs to read his paper entitled "A few Practical Illustrations of the Value of Photography in Law and Medicine" (see page 320).

The CHAIRMAN spoke of the great truth of Mr. Biggs' remark that drawing was utterly inadequate to represent the many most useful objects of scientific and medical interest and legal evidence which photography so effectually and conclusively did.

Mr. Biggs said that as a medical man he had simply to place a photograph of any peculiar case at the top of his note-case book, and place his notes beneath, and the case spoke for itself with a clearness equalled by no amount of elaborate explanation.

Mr. POWELL asked if it would not be evident in the case of the altered book that the thinness of the part erased was conclusive.

Mr. Biggs said it was even on such points perfectly clear, and that no photographic jury would, for a moment, have thought of acquitting the accused.

Mr. H. A. H. DANIEL brought before the Chairman the photographic evidence at the Tichborne Trial, and said he could never understand why it was so easily passed over, being from a medical point of view so important.

Mr. Biggs said that fortunately juries were not all skilled, for if such delicate evidence were made so very important, the public would express much dissatisfaction through not understanding it; but in the case adduced by Mr. Daniel, if a medical man had been told that the ear represented in the photograph and that of the Claimant were the same, he might listen, but certainly would not believe it. He stated that the success he had had with gelatine plates would enable him to photograph many subjects of peculiar forms of idiosyncrasy now under his care, and as the new post mortem room at the hospital was under his direction, having been fitted up so as to be easily altered for photographic purposes, he hoped soon to be able to exhibit some peculiarly interesting specimens.

On the motion of the Chairman, seconded by Mr. Daniel, a

cordial vote of thanks to Mr. Biggs for his paper closed the meeting.

The paper was listened to with intense interest, the subject being one which placed the art in a very new light before the members.

It was decided that the first excursion meeting should take place on Wednesday, 28th inst.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

At the meeting of February 4th, with President NEWTON in the chair, after the reading of the minutes and acknowledgment of receipt of various photographic publications,

The PRESIDENT introduced to the Section Mr. J. Traill Taylor, from London, stating that he had come to live in New York, and make it his home.

Mr. TAYLOR, in returning thanks, stated that it was not only his intention to live there, but to apply for a membership of this Section.

Dr. VANDERWEYDE exhibited to the Section some pictures taken by his son in London by the electric light.

Mr. DUCHOCNOIS said that he had received some from Paris from M. Liebert, who had bought the Vanderweyde process.

Dr. VANDERWEYDE said that the difficulty in taking pictures by artificial light was that the shadows were very black and the lights exceedingly strong, owing to the fact that the rays of light were divergent, coming from a point, whereas daylight was convergent. To overcome this difficulty his son used a combination of a parabolic reflector with a Fresnel lens. The light was placed in the focus of the reflector, which was of white enamel, to imitate a white cloud; the rays of light were reflected upon the lens in parallel rays; passing through the lens the rays converged on the sitter, who was placed a little within the focus of the lens. The sitter was entirely screened from the unpleasant glare of the light. The time of exposure was ten to twenty seconds. He used carbou points. The exposure was so short that he had no trouble about the steadiness of the light.

Mr. TAYLOR said that if he had been aware that this subject would have been brought up, he would have brought some specimens. He had been photographed by the electric light, and certainly there was at least one side reflector used to illuminate the shadows on that occasion. A simple apparatus, being used very extensively now, and wonderfully cheap, was composed of somewhat rude parabolic reflector, in the centre of which was a small lantern (although not necessarily in the focus) with violet coloured glass. This was all covered over with a piece of paper, which acted as a white cloud; a small quantity of some pyrotechnic compound rich in actinic light-producing properties was ignited, and in the space of ten, fifteen, and, in some cases, twenty seconds, a very admirable picture might be taken.

Mr. CHAPMAN did not see how the deep, heavy shadows could have been got rid of without the use of additional reflectors. Still, if he had reflectors to light up the shadows, it was what all needed, even under a skylight.

The PRESIDENT had made a negative by request with a view-lens made for out-door work, for taking groups mainly, about fourteen inches focus. It was made on an emulsion film, but mainly to see whether the emulsion was sensitive enough to work with a view lens in-doors to make a portrait of this size, about a four-inch head. It was not a very perfect negative, but it demonstrated the fact that the emulsion was sensitive enough to work with that kind of a view-lens. This plate was exposed one minute. With the ordinary bath process it would have required from four to six minutes' exposure. He would say, in reference to the time, one minute under his light; at this time of the year it took at least four times the exposure required when the sun was higher, say from May to September. He would take that same picture in twenty-five seconds, perhaps twenty, with as much effect of light as there was on the negative shown.

Mr. TAYLOR said he looked upon the production of such a picture in the time given as an immense advance.

The meeting then adjourned.

At the meeting of March 4th, after transaction of the usual routine business, the SECRETARY read a communication announcing the appointment as a Committee on Chemistry and Optics for 1879, of Messrs. T. D'Oremloux, Charles Rice, D. C. Chapman, the gentlemen nominated by the Committee appointed for that purpose at a former meeting.

Mr. DUCHOCNOIS, on behalf of the committee appointed to nominate officers of the Section for the ensuing year, reported as

follows: Mr. H. J. Newton for President, Mr. J. B. Gardner for Vice-president, Mr. D. C. Chapman for second Vice-president, and Mr. O. G. Mason for Secretary.

Mr. MASON exhibited to the Section a small evaporating dish made of sheet iron coated with a glaze which was proof against acids or alkalis. It had been tried at the Bellevue Hospital, and found to be very good, and would be used there instead of those heretofore employed. They would stand fire, and were not liable to break. He also exhibited some photographs of subjects taken at his studio in Bellevue Hospital. In his remarks he said: I do not exhibit these prints as specimens of fine photographic work, but as curiosities of disease, and how photography is used to illustrate diseases. Some of them show the patient both before and after treatment. Such subjects are not very easy to keep still a long time, because most of them are in pain. Something more than ten years ago I was requested by several members of the surgical staff to illustrate the diseases treated at the hospital, and after considering the matter some months, finally accepted the proposition and was appointed the official photographer for the department. There were at that time only three surgeons on the staff who seemed to have an idea that photography could be made useful, or, rather, that it might prove an important adjunct to their work. These three had their most important cases photographed when they were received, and after an operation, or when they were discharged. After two or three years other members of the staff, seeing the importance of the work, slowly came in for their share, until, at the present day, the men who first took little or no interest in the introduction of photography patronize it the most extensively. I made for some of these surgeons a large number of prints of important cases, of which some are sent to Europe to illustrate the processes used in the treatment of diseases in New York. I make three copies which I furnish free, one to the visiting surgeon in attendance, another to the house surgeon who has charge of the case, and another print I mount in the book of the hospital. Other prints are made on the surgeons' private orders at little more than cost price. When you refer to the hospital books provided for the last few years, you can find the most important surgical cases not only fully described, but illustrated. Many observers have thus been able to avoid mistakes and errors which have been brought to their notice through the means of photography. Thus we see that the surgeons and the histologists, like most other scientific men, are more or less dependent on photography in recording for others what they are doing.

Mr. CHAPMAN: In cases of this kind, and in a great many other cases, photography, they say, don't lie; in fact, it does not lie, but it fails to tell the truth. The colours, of course, are wanting. You have the form, but no colour. If that could be added, the results, of course, would be perfect. But as far as the colour is concerned, or the relative lights and shadows, there is a good deal that it does not tell the truth about.

Mr. NEWBERRY exhibited to the Section some photographs said to be in permanent colours executed by his daughter. One of the pictures was made fourteen years since, and another seven or eight years. Neither appeared to have faded in the least.

Messrs. Mason, Attwood, and Chapman having been appointed a committee for the promotion of a stereopticon exhibition of work at the next meeting, the Section adjourned.

Talk in the Studio.

TELEGRAPHIC PHOTOGRAPHS.—An ingenious apparatus, intended to reproduce telegraphically at a distance the pictures obtained in a camera-obscura, has, says *Galvani*, recently been invented by M. Senlecq, of Ardes. The principle on which it is based is the property possessed by selenium of presenting a very variable and very sensitive electrical resistance according to the different gradations of light.

PHOTOGRAPHY BY ELECTRIC LIGHT.—An American contemporary says: "It has become quite the fashion in Paris for parties of ladies and gentlemen after dinner, or on their way to the opera, to step into a studio and have their photographs taken by the electric light. It is, moreover, said that the Americans are the best patrons of these night studios."

CEMENT FOR UNITING METAL TO GLASS.—The following recipe is from the *Monthly Magazine of Pharmacy*: Take 1 pound shellac dissolved in a pint of strong methylated spirit, to which

is to be added 0.05 part of solution of india-rubber in carbon bisulphide; or take 2 ounces of a thick solution of glue, and mix with 1 ounce of linseed oil varnish, or 3-4ths of an ounce of Venice turpentine; boil together, and agitate. The pieces cemented should be fastened for fifty or sixty hours to get fixed.

To Correspondents.

W. W.—The address of Mr. England is 7, St. James's Square, Notting Hill, W.

B. Cross.—There are various methods by which the plate can be kept from touching the bottom of the bath. If a glass dipper be used, let the ledge, or shoulder on which the plate rests, be cemented on the long strip of glass about an inch from the bottom. If the dipper be made of silver wire, it can have projecting feet to prevent the plate going to the bottom; or a hook, or ledge, can be cemented to the back, by which the dipper may rest or hang upon the back of the bath, at any depth which may be chosen. The kind of dipper used will chiefly influence the plan chosen, but there are many methods of carrying out the same idea. It is a wise thing to attend to. We have often seen one end of a negative covered with spots from the sediment at the bottom of the bath being stirred up, and falling on the lower end of the plate.

G. Young.—Opinion and practice are much divided. As a rule, if a photographer have an extended connection for large work, he will produce large negatives direct for all sizes up to sixteen inches by twelve inches; if he have only occasional work to do, and have not appliances for doing large work direct, he will take a small negative and enlarge. Skillful men will produce good results by either method. If by enlargement, the best plan is to produce an enlarged negative from a transparency. For large direct portraits, a portrait lens of long focus answers best.

News.—The name and address of the Secretary of the Manchester Photographic Society are as follow: Mr. W. J. Chadwick, Prince's Bridge, Manchester. 2. The term doublet is applied to a double combination, such as a portrait lens. The lens to which you probably refer is the Symmetrical Doublet of the firm in question. It is used for various purposes, such as groups, architecture, landscapes, &c. The Ross' Catalogue you have, which makes no mention of the lens, is probably an old one. The lens has been introduced a few years.

Novice.—You may calcine oyster shells by placing them on an iron shovel and submitting them to a strong heat until they lose their shape and fall into powder. But if you wish to experiment with phosphorescent photographs, you had better purchase your sulphide of calcium of a manufacturing chemist.

THOMAS LIONS.—You do not state what kind of colouring the preliminary preparation is intended for—water, oil, or crayons. For oil colouring, a size made by dissolving isinglass in weak alcohol and water, by gentle heat, answers very well. We cannot give you proportions, as we have always judged by the eye in preparing it, and have not seen a formula. For water colour, a very dilute sizing of the same preparation answers well. Or, take an ounce of spirit varnish, and add to it two ounces of water in which twelve grains of borax have been dissolved. Newman sells an excellent preparation for the purpose.

R. M. F.—Kaolin is used—or, rather, used to be used—for removing the brown discolouration which the printing bath at times acquires from contact with albumenized paper. Agitating the solution with kaolin, and filtering, removes the colour; but the use of kaolin has been largely superseded by the simpler plan now employed.

K. B. Y.—The deep purple colour in your toning bath indicates precipitation of the gold. It will certainly not tone satisfactorily when the gold is precipitated. You had better make a new one at once. The misty, indefinite effect is much increased by the want of definition. It may arise from want of careful focussing, or from general unsteadiness of the sitter, or from the use of an imperfect lens, or from want of firm contact between the paper and negative in printing.

A. M.—If you form a canopy of calico to project about five feet from the top of the wall, and place your sitter under it, the wall forming the background, the sitter being placed about two feet from it, you will probably find the effect very good. If you manage the position right, you will not, we think, require screens or reflectors at the side.

AMATEUR.—A lens of the group class, or a portrait lens moderately stopped down, will answer.

ROGER LAURENT.—You shall have one of the prints in question. Several Correspondents in our next.

The Photographic News, May 23, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE CAMERA IN LAW AND MEDICINE.

THE paper recently read before the Bristol and West of England Amateur Photographic Association, by Mr. Robert Biggs, M.R.C.P., the Deputy-Coroner for Somerset, proves once more how useful photography can be in law and medicine. It is some years ago since the late Dr. Wright pointed out, in a communication to the Photographic Society, the various educational purposes to which photography might be applied in connection with medical students, and other physicians, in Paris and elsewhere, have, from time to time, demonstrated how important the camera can be in almost every branch of medicine. In forming a diagnosis, or in scientific investigation, a knowledge of photography has many times proved exceedingly useful. We remember but two years ago seeing at the Paris Exhibition of photography some striking examples of camera work in connection with medicine. An apparatus termed the pulsograph was exhibited by Dr. Ozanam, whose name as a medico-photographer is already well known. He it was, if we remember rightly, who was the first to point out—or, at any rate, to prove beyond doubt—that not only was there a double action in the beat of a pulse, but a treble and quadruple movement at times. His *modus operandi* was to place upon the wrist or heart of the patient a bag or reservoir of mercury, which was in connection with a tube something like a barometer. The beating of the patient's heart influenced the mercury in the tube, which rose and fell according to the nature of the throb. By placing a light in front of the head of the column of mercury, and a sensitive film at the back, which sensitive film was capable of moving along gradually in a horizontal direction, a wave-line was produced by way of a photographic image. This wave-line corresponded to a rise and fall of the mercury column; and if there had been a flowing wave-line produced, we should have known the action of the heart was uniform and regular. But Dr. Ozanam proved by his pictures that the action was not regular, but that on occasion the mercury column, though rising at one leap, descended again in two or three. The state of the heart could thus be ascertained in a very simple manner of any patient. Moreover, an investigation of the pulses of human beings of various ages, in this way, has also brought to light important points. Dr. Luys, a French surgeon, recently exhibited a whole series of these pulse photographs. Thus, a picture representing the pulse of a boy beating 80 to the minute showed scarcely a wave-line at all, but a succession of sharp zig-zags. A man in the prime of life, whose pulse beats 55 to the minute, gives a picture of a less number of waves; but they are higher and more vigorous than those furnished by the boy. When we come to examine the pulse of a centenarian, which Dr. Luys succeeded in photographing, the feeble action of the heart produces but a series of low-rising curves. A large number of photographs of the brain and skin in health and disease were also exhibited, we remember, in Paris two years ago, to exemplify the use which French medical men now make of the camera in the way of teaching and recording. Mr. Biggs, in his interesting paper at Bristol, the other day, touched upon another and no less important matter, the assistance a photograph may lend the coroner and jury in making up their minds to an issue. Several instances were mentioned in which the camera had done good service in this way. In one case a child of three or four years of age was found dead, about which the post mortem examination left little room for doubt: the child had been starved to death, its form was terribly emaciated, and appeared to have been carried to an out-of-the-way spot to be got rid of. There was no one in the neighbourhood who could have been the

parent of the child, but a photograph was taken of the remains, and the picture given over to the police at the nearest cities, Bristol and Bath. The result was that within three or four weeks of the inquest the photograph was recognized by neighbours, and a woman found, who was convicted of murder. Going to another case, which came under the Deputy-Coroner's attention, we find an equally important application of photography bringing the truth to light. There had been a serious railway accident, and the principal point turned upon an entry in the signalman's book. An examination of the book was made, and the appearance of the entry led the Coroner to suspect it had been tampered with. He himself, however, could not express an opinion one way or the other, and the jury were divided in their judgment. On his own responsibility, Mr. Biggs had a photograph taken of the page and suspicious handwriting, and the photograph was afterwards enlarged, when the result was to prove unmistakably that there had been erasure and modification of the original figures. We remember a parallel case to this that was tried in one of the Paris courts a little while back. It was a question of a disputed will. A will was produced which was not only suspected to be a forgery, but the person who had accomplished the misdeed was suspected too. To prove the case, some words in the suspected will were photographed and enlarged, together with a few words avowedly in the handwriting of the accused, and enlargements of the two photographs turned out sufficient for conviction. There was a tiny spluttering noticeable in the upstrokes, where the pen was arrested, and this characteristic spluttering was common to both writings. M. Gobert, the photographer attached to the Bank of France, as our readers know very well, has been fortunate to discover many erasures and modifications on cheques and bills by the aid of photography, and that establishment finds it worth while to have a photographic studio fitted up on the premises, so indispensable has the camera become as a detector of wrong-doing. Again, to secure truthful records of the results of operations in surgery, the camera, Mr. Biggs points out, is invaluable. A photograph of a person with a squint, before and after an operation, shows how successful the latter has been. If drawings had been substituted in such a case, they would have been of little or no value. No one would have known how much or how little they had been exaggerated—how much or how little the deformity, or cure, had to do with the photographic result; but knowing, as Mr. Biggs says, the veracity of our witness, we may rely upon the photograph as truly as upon our own eyes. Again, says Mr. Biggs, some time ago an American surgeon devised a new mode of treatment in a disease known as spinal curvature. He published the details of his treatment and description of his apparatus; but to make his description more clear, illustrated his works by photographs, showing the steps of his manipulation in its various stages, and rendering the whole so clear that any medical man could see and understand the plan without further knowledge. The College of Surgeons in London possess at this moment a very valuable series of photographs representing subjects of interest to the medical profession, all of which are far more useful than the most skilfully executed drawings could possibly be. In our medical schools, too, photography now holds an important place, and diagrams enlarged by the camera are put before the student in lieu of the free-hand productions formerly employed, while in some cases the pictures exhibited are obtained by throwing upon a screen enlargements of photographs by the aid of a magic lantern or similar contrivance. In this way the microscope is to some extent superseded—and the microscope, as everybody knows, is very difficult of employment in the class-room. It would be interesting if other of Mr. Biggs' brethren would come forward to add to the valuable experiences which that gentleman has recently given us of the assistance that a Coroner derives from photography.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY AT THE INDUSTRIAL EXHIBITION OF MARSEILLES—POSITION OF PHOTOGRAPHY AT INDUSTRIAL EXHIBITIONS—CARBON PRINTING AT MARSEILLES.

Photography at the Industrial Exhibition of Marseilles.—Since my last letter nothing new in the region of photographic discovery and progress of which I can give an account has occurred among us; moreover, I have been on a trip of some days to Marseilles, and have taken advantage of my stay in that important city to make myself acquainted with the photographic work that is being carried on in it. At the time of my arrival an industrial exhibition had just been opened, with a competition for prizes open to manufacturers of the district only. I had hoped to find also an adequately represented photographic section in this exhibition, as the district to which the competition is limited comprises seven or eight Departments of the south of France. To my great astonishment there are only three or four exhibitors of photography, notwithstanding that there are at Nice, at Montpellier, at Nîmes, without including Marseilles itself, photographers of great repute. It is difficult to explain this remissness, unless it be owing to bad management on the part of the executive of the exhibition, or to a general disinclination to take part in these shows, which are now becoming quite wearisome from their frequency. The photographers of Marseilles had, however, originally consented to exhibit on the condition that their works should be placed in the same gallery as that in which the Fine Art Section of the Exhibition was installed. They were unwilling to have their works mixed up with those included under the head of manufacturing industry proper, and they urged that if photography be not itself a fine art, it is at any rate entitled to be ranked as an important ally and auxiliary of the fine arts; its place is, therefore, by right in immediate contiguity with the latter, and nowhere else. This perfectly well-founded claim was at first admitted; but the authorities having subsequently changed their mind, the photographic section was relegated to the department where are shown pomatum pots, forcing pumps, and garden engines. Of course, this highly incensed the photographers, and they nearly all declined to exhibit. Thus our art has missed an excellent opportunity of advertising itself; but, then, "principles above everything"! At Marseilles an attempt was made to raise the banner of photography so high as to place the art in a position of its own. Without claiming for it the same rank as the creative arts occupy, the promoters of the movement were satisfied that it had the right to be considered the indispensable auxiliary of those arts, and that in this character it should be allowed to march at their side.

Position of Photography at Industrial Exhibitions.—This question has become one of considerable importance, and it is true that a precedent was established which could be brought forward on future occasions of the same kind. At Paris, the exhibition of the Photographic Society of France is generally held at the *Palais de l'Industrie*, in an annexe of the Fine Art Exhibition—the *Salon*. But at the International Exhibition, photography was classified with the manufacturing industries; and, in reality, if we institute a comparison between the scientific and the artistic aspect of photography, its place would seem rather to lie among the industries. I have nothing to say, and am well pleased if, considered as one of the arts of reproduction, it may be included among the retinue of the fine arts; at the same time I do not think that there is any occasion to sulk and feel sore because it is relegated to the company of the manufactures. I do not imagine that a photographer, however much he may be an artist, will so far overcome his artistic instincts as to assert that the results he produces are works of art; they may satisfy artistic conditions, just as is the case with a suite of

carved furniture or a piece of fine tapestry, or an exquisite porcelain vase. But all these objects are classed among the produce of manufacturing industry, or among the decorative, but not among the fine arts; they are the result of a mechanical or scientific application to art. The human hand has had no further part in the production beyond directing the tool or the machine employed in the manufacture. It is from this standpoint that a distinction is established—and rightly, in my opinion—between works of art properly so called, and those in the production of which art is certainly made available, but only in the character of an industrial application. The true place of photography is, on this showing, rather in the category of the industrial, than in that of the fine arts; the latter must be limited to the arts of drawing, painting, and sculpture, or in addition of original lithography and engraving. It is not the first time that this subject has given rise to differences of opinion, and it seems to me to be quite time to get some decision accepted by the majority of those interested, a decision which should put an end to any future difficulties of the same kind.

Carbon Printing at Marseilles.—However that may be, the photographic section of the exhibition at Marseilles cuts but a sorry figure, and it struck me I should employ my time to greater advantage by paying a visit to the principal photographers of the city, and studying the work that they execute. It gave me real pleasure to observe that the two well-known houses of Chéri-Rousseau and Cayol Brothers are working the carbon process on a large scale; they use it for producing prints with a light tint of colour. It is true I am not an admirer of these prints, in which the colour is scarcely indicated; but, like everything in the way of novelty, it is a question of the fashion of the hour. The process in this form, however, is very easy of manipulation, for it is only necessary to spread a light coat of colour over the face of the carbon prints previous to their final transfer. Messrs. Cayol transfer their carbon pictures, coloured at the back, to the same kind of paper as is used for producing drawings in two crayons; the effect to anyone who does not know how it has been produced is—one can scarcely say artistic, but, perhaps, pseudo-artistic. It certainly conduces to making the tone less dry than that of a simple photograph in monochrome, and in this respect I believe that the firm are in the right road to produce some charming results. M. Chéri-Rousseau has a large establishment at St. Etienne—one better known than this at Marseilles, which he has only recently taken over. Here he produces a particular kind of pale photograph by the photochromic process; his pictures give one too much the impression of the black or grey of photography, and if he wishes to make use of the process of photochromie, I should like to see him do so more thoroughly. All the enlargements produced by this firm, as well as that of Cayol, are executed by the carbon process—an example which should be followed by all photographers. Though the carbon process has not yet been practically applied to taking small photographs of the *carte-de-visite* or album size, it cannot be said with truth that it has not been employed on a complete scale for the production of large pictures. It must be looked for that the public will become more exacting, and will want to have permanent photographs of every size, though at present they are scarcely aware what the term implies. I happened to be present in M. Cayol's shop when a customer, a man in society, came in to inquire the price of an enlargement. On being told by the proprietor that he would get a *carbon print*, he replied: "I don't know what that means, but I feel sure you will treat me quite fairly." In short, the public must be educated before we can expect to become more general the employment of the processes by which permanent photographs are produced. But it will come!

LEON VIDAL.

TICHBORNE—AN EXPLOIT FOR SCIENTIFIC PHOTOGRAPHERS.

BY WILLIAM MATHEWS.

"Not only does photography reproduce with absolute perfection details which the most scrupulous eye-work could not trace without error, but it actually sees what is invisible; the sensitive plate receives impressions which altogether escape the human eye."

Mr. H. Vogel, of Berlin, cites the case of a lady who had always, as the phrase is, 'taken well.' She 'came out' one day all over little black spots. Two days after, it became evident that the lady had the small-pox. In fact, she died of it soon after. Her face must have been covered with very faint yellow spots before any eye could trace the least mark upon the skin.—*All the Year Round*.

IN various of the scientific journals the above passage has been quoted from *All the Year Round*, pointing out the remarkable faculty inherent in photography of bringing to light details that under other circumstances are invisible, or that have altogether escaped previous detection.

In view of the substantial accuracy of this statement, the inventor of the appliance known as the "Identiscope" deems himself called upon to give publicity to a fact that for some time has been within his knowledge, and which he sees no good reason any longer to refrain from divulging. The manifest disinclination of a trusty friend or two of the Tichborne Claimant, in regard to venturing upon what they have deemed to be dangerous ground, has been the chief influence during the past twelve months in restraining the writer from submitting the matter at issue to the public cognizance of authorities in the photographic art.

The series of life-size photographs of the "undoubted Tichborne," and also of the "Tichborne Claimant," now in the possession of the writer, were produced, he believes, from negatives derived directly from the sworn portraits used in the trial at Bar. They were supplied by Messrs. Maull and Co., of Piccadilly, and their perfect authenticity is beyond all question. The "original," it is superfluous to say, remain under the seal of the High Court of Judicature.

The several "copies" above spoken of were subjected by the writer to that special geometrical admeasurement and linear sub-division which is an essential attribute of the Identiscope. The scrutinizing introspection of details which the process involved, and which in effect extended over some months, resulted, ultimately, in the assured conviction on the writer's part that evidence of a remarkable and most conclusive nature had an unsuspected existence upon the portraits of both epochs.

In a word, the Daguerreotypes of the undoubted Roger Tichborne, taken at Santiago, January 1854, and the photographs of the Tichborne Claimant, taken at various times, bear alike and undoubtedly extensive vestiges of an ornate device, which (evidently at an early period of life) had been inwrought by puncture upon the fabric of the skin.

If this fact be one capable of verification, it is of no secondary nor immaterial nature. At the same time, when the writer remembers that some months had elapsed before he himself was cognisant of the presence of these tracings, not to say they had escaped the notice of the artists who produced the photographs, it cannot be a subject of surprise should the announcement be received with some degree of incredulity; and, certainly, if it be only when the eye has undergone a process of education that their visibility is ensured, there will be still sceptics who will deny their existence altogether.

But the writer recurs to the passage quoted from *All the Year Round*, and relies confidently upon the advancing skill of photographers, and upon the latent powers of their art. He therefore invokes their aid. Fortunately, the copies of the Tichborne portraits have been multiplied most extensively, and are disseminated into every quarter of the globe. If, then, photo-

graphy really possess the remarkable faculty attributed to it, no fear but that the means will be devised of causing these portraits to render up the secret they have so well kept. In one aspect, it may to some be even deemed a matter of congratulation that so cogent a piece of evidence has so long remained hidden alike from friend and foe. For certainly, when it is remembered that the Tichborne Claimant has been incarcerated for years, without one thought of any such evidence—which has been neither appealed to, nor its existence in the least suspected—it negatives at once and for ever all suspicion of fraudulent origination.

Whilst commending confidently the verification of this disclosure to the attention of qualified experimenters, the writer would indicate to such the direction in which he has himself sought success. It should be known to them that in the instance of mathematically superimposing photo-transparencies of the Tichborne portraits of the two separate epochs (1854–1874), they have resulted in producing a likeness in which every feature is in perfect correspondence, and this "Tichborne Blend," originated some twelve months since by the writer, was, in point of fact, the first example of a veritable "composite portrait" that had been anywhere produced.

Similarly, he would now point out that an exact superimposition, by the same geometric method, of two of the self-same portraits, in which, singly, the tracery may be only very dimly discerned, would result in the tracery becoming more distinctly apparent—owing to its perfect duplication.

There is another mode in which a partial verification may be also obtained by those sufficiently conversant with such matters. If the selected portrait be turned toward a mirror of the highest quality, the portrait at the same time receiving the fullest possible accession of daylight, there will result a duplication of the image, (1) on the surface of the glass, and (2) on the silvering. By suitable adaptation higher results than those yet arrived at would be doubtless attainable by either method.

An important element must be borne in mind in all such experimental tests. With vestiges so faint, no additional enlargement of the image is likely to avail anything. On the contrary, the pattern (constituted, as it is, of very minute cicatrices or papillæ, barely discernible, probably, upon the living face) must be drawn together, so to speak, until the scattered particles again coalesce. The carte-de-visite dimensions, on the other hand, will be too diminutive for the desired purpose.

It is necessary to say that of the Daguerreotypes, the three-quarter portrait supplies the markings in the largest degree. This is partly owing to the manner in which the light fell upon the sitter; but in greater measure from the apparent fact that all copies in circulation of the full-face portrait have been derived from an original that had been "improved" by artistic stippling. The effect of the varied direction of the light may be observed also in the photographs of Sir Roger, the Claimant, making the tracery, in some of the sittings, much more perceptible than in others.

At this stage the writer confides, hopefully, the investigation into abler hands. But, before concluding, he would crave permission to be permitted to say thus much. In his view, the attestations which record the uniform propriety of the claimant's Australian life constitute an element entitled to recognition even here. Certainly, the common allegation, "Oh! he was a bad fellow, whoever he may be," cannot be sustained when fairly challenged. Mr. Gibbes and Mr. Cubitt both accredit him, as of a matter within their own knowledge, that in Australia he had done nothing "of which a man need be ashamed."*

* It is obvious that the question discussed by Mr. Mathews in the above article is a purely scientific one, and its interest is not in any degree affected by the moral character of the Claimant either in Australia or elsewhere.—Ed.

COLLODIO-BROMIDE EMULSION.

BY W. B. WOOD.*

HAVING been asked to read a paper on the mode of preparing my collodio-bromide emulsion and plates, I will commence without wasting any of your time, stating to whom I am indebted for various hints. Before going into details I wish to say that, from the report of last month's proceedings, I have no doubt many of you will be under the impression that I am about to give you an extra-rapid process. Such is not the case, as it is only moderately so; but it is to be depended upon, and, what is also an advantage, both emulsion and plates keep well. I have kept plates four months, and emulsion four to five months, and yet both have worked well. I generally give a little more exposure for an old plate or emulsion. By being able to work very quickly, I mean that the emulsion and plates are easy of preparation.

We will first commence with the bromised collodion. For convenience sake we will make what will be, when sensitised, two ounces and five drachms, although I recommend the bromised collodion to be made in much larger quantities, as it improves by keeping, and also enables you to take the requisite quantity perfectly clear.

Into a bottle pour of alcohol (795) two drachms (if you use it of a greater specific gravity it is liable to produce crappiness and uneven films); into this put of cadmium bromide (crystallised twenty grains, or, if you use anhydrous, sixteen grains, and ammonium bromide nine grains). When all is dissolved add pyroxyline, H. T., five grains, and of the ordinary three grains. If you prefer it you may use all high temperature, but I find it gives a film rather too powdery. When the cotton has soaked add methylated ether (720) twelve drachms, and shake well. This is your bromised collodion.

To sensitise the above, pour into a yellow, wide-necked, stoppered bottle, capable of holding four or five times the quantity (by having it with a wide neck it enables the silver to be added without running down the sides of the bottle), three-fourths of the above collodion, and place the bottle in a vessel of only lukewarm water. Into a test-tube put thirty-seven grains of powdered silver nitrate, and add to it fifteen minims of water; then apply heat until all is dissolved. Measure out seven drachms of alcohol, and pour about five and a-half drachms into the silver nitrate (gradually warming between each addition); keep back the remainder for the final rinsing of the test-tube. Apply heat again, and when all the silver is dissolved, pour gently into the collodion, a little at a time, shaking well between each addition. I generally place my test-tube in a jar of hot water while I shake the bottle; this prevents the silver falling. In about three minutes after the last of the silver has been added, pour in the remaining portion of the collodion, shake very well again, and place aside for twenty-four hours.

To test the emulsion proceed as follow:—Immerse white paper in a saturated solution of potassium bichromate, and dry in the dark; afterwards cut it up into strips for use. When the emulsion has rested the requisite time, shake well and dip in one of the test papers, and if it turn red there is an excess of silver. To correct this add more collodion, estimating the quantity as near as possible by the depth of colour. Do not judge the paper by transmitted light, as it is apt to deceive you; the coating of the emulsion adding to the thickness of the paper makes it appear red, when such is really not the case. You may, however, test it in any other way familiar to you.

To prepare your plates (which must have a substratum), shake up the emulsion well several times, and test its flowing properties; if it set in furrows, add more ether and alcohol (other two parts, alcohol one part) until it gives an even film. After the last shake, let it stand five or ten minutes; then filter through linen into another bottle a sufficient quantity to coat your plates. Place the funnel in the stock bottle and commence coating your plates, draining the excess into the

stock bottle; now rock your plates well to prevent waviness, and always carefully wipe the neck of the bottle before coating the succeeding plate. When the film is fairly set, and not before (as I have noticed that one cause of uneven densities in films is through dropping them into the wash water too soon), drop it into the wash water, and allow it to remain until greasiness has disappeared. Before taking it out rock it a little, and place it in, or flow over, the preservative for about one minute (I use plain beer perfectly flat; if it be not so, place it in a warm place for a short time). Remove the moisture from the back of the plate and rear it on one corner in the drying-box, allowing it to rest on three or four folds of blotting-paper (I place mine in a draining-rack until all are finished, and before putting them into the drying-box I remove the pool of preservative from the bottom with a piece of blotting-paper. These plates do not require any backing, being almost as dense as a zinc bromide plate, although only containing about two-thirds the amount of cotton.

Exposure.—I give on a clear day (April), with a Ross' portable symmetrical No. 3 and stop No. 3, three and-a-half to four minutes, according to subject.

Development.—Drop the plate into a dish of water and allow it to remain until greasiness has disappeared. Make up beforehand the following solutions:—

No. 1.—Pyro 96 grains
making up to 1 ounce in alcohol.

No. 2.—Ammonia (880) 1 part
Water 8 parts

No. 3.—Potassium bromide 20 grains
Water 1 ounce

into (say) 3 drachms of water; add one or 2 drops of Nos. 1 and 2.

Stir with a glass rod and flow over the plate. If it has been properly timed it will come out gently. Do not force the picture, but wait patiently, and should you require more detail, add more ammonia; if more density, add more pyro. I always intensify my pictures, after fixing, with Mr. H. Cooper's gelatino-iron intensifier.

I cannot say how long the plates will keep after exposure, the longest period I have kept one being a fortnight, and it developed quite as well as one that had been exposed and developed the same day. I do not advise keeping plates after exposure, as you may, if necessary, develop them by the aid of a naked candle, if the latter be kept at about two or three feet from the plate.

In conclusion, allow me to advise you to test the flowing qualities of your emulsion on a small plate before coating large ones, and, if necessary, dilute it; shake well again, and allow to rest five or ten minutes before using. Never employ beer unless it be perfectly flat. You will find it wise to pour a little of the water with which you intend to wash your plates into a glass and examine it. I have sometimes found it muddy in consequence of repairs in the streets. Never filter your emulsion into a bottle with old emulsion sticking to the bottom. The best way to remove it is to place a quantity of small glass beads with water into the bottle and shake well; this will remove the film when acids, &c., fail. And, finally, let me say that should the process be thought worthy of your consideration, I shall feel amply repaid for my trouble, and I may add that it is a pleasure to me to give details of the process to you in acknowledgment of various hints, &c., I have received from the members of this Society and of other similar bodies.

A SINGULAR COPYRIGHT CASE.

THE *South Eastern Gazette* has the following details of an interesting case of piracy, in which the copyright of a duly registered photograph is protected:—

F. PHILLIPS v. J. HILLS.

This was a case of a somewhat remarkable character. Mr. D. Kingsford, barrister (instructed by Mr. S. H. King) appeared for

* Read before the Manchester Photographic Society.

the plaintiff, and Mr. J. J. Merriman, solicitor, of Glasshouse Street, London, for the defendant.

Mr. Kingsford said the action was brought under the 25th and 26th Victoria, cap. 63, and the plaintiff claimed a £10 penalty and the forfeiture of a certain copy or colourable imitation of a copyright photograph which the defendant had made. In August, 1877, an Act of Parliament having been obtained, a new bridge over the Medway was commenced at Maidstone. Shortly before the work was begun, the plaintiff, who was a photographer in Maidstone, took some very careful photographs of the bridge from each side, and it was his intention to enlarge them in some cases, hoping that when the old bridge was pulled down the pictures would be of general interest, and would have a large sale. The photograph in question was taken in July or August, 1877, and shortly after it was taken the scaffolding for the new bridge was put up, and it became utterly impossible to take any picture of the old bridge. The plaintiff registered his photographs, reproduced them in various shapes and sizes, and had a large sale for them, the price being 3s. 6d. each. In March of the present year, the defendant, who was an artist in London, and who appeared to have had a relation in the neighbourhood, thought it would be a good speculation to prepare a painting (produced in court) which was really a copy of the plaintiff's photograph; and from what his solicitor then said, it was the defendant's intention to photograph the picture and sell some of the photographs in the town. The picture was placed in the window of Mr. Martin's shop in Middle Row, and on the plaintiff enquiring who painted it, and stating that it was a reproduction of his copyright photograph, Mr. Martin said that it had been sent by the defendant for exhibition. The plaintiff consulted his solicitor, and, wishing only to protect his rights, desired to have the matter arranged amicably. Defendant, whose cousin had previously admitted that he had sent the plaintiff's photograph to the defendant, consulted Mr. Monckton, solicitor, who called at Mr. King's office, and said that the picture was not really a copy of the photograph, and that his client intended to photograph the picture, and was justified in so doing. Plaintiff, under these circumstances, felt it necessary to bring this action.

A copy of the photograph made by the plaintiff was then handed to the Judge, and the defendant's picture, a large size oil painting, valued at twenty guineas, was brought into Court for comparison. Mr. Kingsford pointed out that the painting was almost an exact reproduction of the photograph, the landscape, buildings, barges, boats, and general details being the same. The sky of the picture was of course different to that of the photograph, while the defendant had introduced another boat into the foreground and the figure of a little boy, who was apparently engaged in piloting a miniature ship from the banks of the Fair-meadow.

The plaintiff was called, and deposed to the facts of the case as stated by his counsel. In answer to Mr. Merriman, he said there was nothing new in the design; the sky was blocked out in the usual way, and the clouds were printed in from a cloud negative.

The registry of the photograph at Stationers' Hall having been proved, Mr. John Hills, the defendant's cousin, was called, and deposed to purchasing a photograph of the bridge at Mr. Burgess Brown's, and sending it to the defendant, who lived at Herne Hill.

By Mr. Merriman: His cousin had commenced to paint the picture some four or five months before he sent him the photograph, and was down at Maidstone sketching about twelve months ago.

Mr. S. H. King, solicitor, of Maidstone, said he believed the three sketches produced were those handed to him by Mr. Monckton. The latter, he had since learned, was not going to act in the matter for defendant.

By Mr. Merriman—The defendant had contended from first to last that this was an original picture.

His Honour having expressed some doubt as to the meaning of the words "colourable imitation" in the Act of Parliament, and remarked that surely a copy must be like the original,

Mr. Merriman addressed the Court for the defence. He contended that the Act only gave a man a copyright in the work of his own genius, and a copyright photograph must be a photograph of something which had been created in a man's own brain. A colourable imitation must be something by which a purchaser might be deceived. Nothing was further from his client's thoughts than to interfere with the plaintiff's photographs; and could it be contended that the defendant's twenty-guinea picture was an invasion of a three-and-sixpenny photograph? It was clear the plaintiff had sustained no possible damage, and he was

prepared to show that the defendant's painting was an original picture, although he had availed himself to some extent, as artists often did, of the plaintiff's photograph.

The defendant, Justice Hills, was then called, and said he made the sketches of the bridge produced some time ago, and he also took some notes, which he had mislaid. The picture he had painted was mainly from his sketches and from the photograph. The details he took from the photograph.

In reply to his Honour, who severely cross-examined him, the witness said he had never stood by the Gas Works and sketched the bridge, but he had taken sketches from other points.

The Judge said he had come to the conclusion that the picture was really a copy of the photograph, but he put it to the plaintiff whether he desired the full penalty to be inflicted, or only a nominal one.

Mr. Kingsford said they did not wish to destroy the picture, but it was forfeited. The plaintiff had no vindictive feelings, but wished to be indemnified. The risk was that if the picture were sold it might be copied.

The Judge—Why not present it to the Museum?

Mr. Kingsford thanked his Honour for the suggestion, and said his client would give the picture to the Museum. The painting would come from Mr. Phillips.

The Judge—Defendant will appear as the artist.

Judgment was then entered for the plaintiff, defendant being ordered to forfeit the picture, and pay a penalty of a guinea and the costs.

Mr. Merriman intimated that he might possibly appeal against the Judge's decision.

NEW PIGMENT PROCESS FOR ENLARGEMENTS.

The *Association Belge de Photographie* publishes a pigment process by Dr. Van Monckhoven, which is especially adapted to solar enlargements. He dissolves wax in benzine, charges a small quantity of cotton with the solution, and applies the latter to a light piece of plate glass. The plate is then provided with a coating of collodion or varnish, and then immersed in water for thirty minutes. It is then taken out and placed flat upon a table, where it is coated with a mixture consisting of a coloured pigment, gelatine and bichromate of potassium, which having become firm, the plate is allowed to dry in the dark. In place of this (in addition to this) Monckhoven usually takes pigment-paper, sensitized in the usual manner by dipping in a solution of bichromate of potassium, places it upon the collodionized surface of the plate—previously moistened with water—rubs it down in order to obtain perfect adhesion, and finally leaves it to dry. The plate is then exposed in the solar camera (enlarging apparatus) by allowing the picture-rays to act, through the plate, upon the film treated with bichromate. The exposure is regulated by the assistance of the photometer. The plate is subsequently immersed in warm water of 30° for fifteen minutes, then in water of 60°, after which the sheet (paper) is detached, and the picture developed in the usual manner. It is then fixed, and a piece of white gelatine paper is finally affixed to the picture by means of the roller. When this has become perfectly dry, the picture is detached. If white gelatine paper be used, which is very brilliant (glossy), the picture will retain its smooth appearance even if it is mounted on cardboard. If, on the other hand, dull-looking gelatine paper be employed, the picture will have the appearance of any ordinary print obtained by single transfer. Relative to this process, Monckhoven declares the exposure of the pigment-film as adhering to the plate to be essentially new. The following advantages are claimed:

1. The netlike appearance of the pictures and the spontaneous insolubility of the chromo-gelatine will be avoided.
2. A perfect evenness (uniformity) of the paper, and a greater durability of the same, are obtained.
3. All draw-backs of the single transfer process, as imperfect adhesion, air-bubbles, and other casualties well known to persons using the pigment process, are successfully avoided.
4. The resulting prints remain perfect, and the pictures are clear and sharp beyond comparison.

The Photographic News.

Vol. XXIII. No. 1081.—MAY 22, 1879.

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INFRINGING PHOTOGRAPHIC COPYRIGHT.

ON another page we print details of a curious copyright case, which recently occupied the attention of the Maidstone County Court. The infringement of copyright in paintings by means of the camera has not been uncommon, and it is generally the subject of much virtuous indignation when discovered and prosecuted. Piracy by painting, victimizing the photographer, is not so common—at any rate, it is not so often found out, and made public. There are many such cases, however, familiar to photographers, in which a photographic study has been minutely copied, and then exhibited as an original picture. One of Mr. H. P. Robinson's photographs was so copied not long ago, the artist's plea being that he merely obtained the details of his picture from the photograph! A somewhat similar plea was put forth at Maidstone in regard to the case we have mentioned. Mr. Phillips, a photographer at Maidstone, took some photographs from different points of an old bridge which was about to be removed, thinking that views of the old bridge would be popular after it was gone. The event justified his prevision, and he secured a large sale. Mr. J. Hills, an artist, living in London, thought the old bridge would make a good subject for a picture, photographic copies of which would sell. Unfortunately for him, he did not produce his picture before the bridge was removed. This was not a serious obstacle, however, for according to the allegation of the photographer, Mr. Phillips, the painter, copied the photograph, producing, indeed, a very good copy, with a sky and some figures added. The copying was denied by Mr. Hills, who alleged that he had made sketches of the bridge before its removal. It seemed to be admitted, however, that the photograph was used for the details. The defendant's counsel made some extraordinary remarks in defence. The Copyright Act, he contended, only gave a man copyright in the work of his genius, and a photograph could not be called the creation of a man's own brain! It was impossible, he thought, that a twenty-guinea picture could be a piracy of a three-and-sixpenny photograph. The old, old story of the inferiority of photography to painting! The counsel was endeavouring to be "wise above what is writ" in his allegation as to the intention of the Act, which, in point of fact, makes no mention whatever of the production of a man's own genius. It simply states that he shall have a copyright in the work of which he is the author, whether that work be a product of genius or not. Fortunately, therefore, it was not necessary to argue the possibility of a photograph being a work of art. The judge, very sensibly, examined the painting and the photograph, and expressed his conviction that the former was a copy of the latter; and as, in this case, the painting was forfeited to the plaintiff, the judge suggested, doubt-

less by way of making the pill to be administered less difficult to swallow, that, instead of claiming the picture, the plaintiff should consent to its presentation to the museum. To this course Mr. Phillips consented, the presentation being made in his name, while the defendant's name will appear as artist. A penalty of a guinea and costs was also inflicted, and so the case closed, probably finally, although the defendant's legal representative intimated a possible intention to appeal against his Honour's decision.

BOISSONAS' RAPID PROCESS.

WE do not, as a rule, feel it to be the duty of a photographic journalist to publish secret formulæ where the inventor prefers to sell his method for a consideration. When, however, we find such formulæ in print in another journal, we should, we fear, be wanting in fairness to our readers if we failed to give them the benefit. M. Boissonas, whose rapid process is beyond a doubt valuable, has received injustice before in the publication of an incorrect formula, the credit of its worthless falling upon his shoulders. We find in the *St. Louis Practical Photographer* the following, purporting to be a letter from M. Boissonas giving details of his process to a friend. We reproduce it *verbatim* for what it may be worth:—

The *Practical Photographer* says:—We give below the great secret of the above process which we received from a friend who procured it from the inventor himself:

"Dear Sir,—In answer to your kind letter, giving to you my last improvements, and begging you, after having tried them, to write me what for difficulties or results you obtain, in order to try to help you as much as possible to arrive to the extreme rapidity which I obtain regularly, I do so. I employ gun-cotton, high temperature, from Mr. Guilleminot, No. 6, Rue Choron, Paris, which is very good.

Gun-cotton	...	...	10 to 12 (10 is enough)
Alcohol	...	...	400
Ether	...	...	500

900 cent. eubic.

I make solution 10 salt, 100 alcohol, let stand, or filter, and take from the clear solution—

Iodine of ammonium	..	45 eub. cents.
Iodine of cadmium	...	40 "
Double bromide cadmium ammonium	...	35 "

In full 120.

"For to do the double bromide of cadmium and ammonium I weigh 6 grammes bromide of cadmium, 4 grammes bromide of ammonium, in full 10 grammes; salt for 100 cent eubic, that quantity of iodizing solution for the over given solution of normal collodion it gives in full.

Cotton	...	...	10 grammes
Alcohol	...	...	500* "
Ether	...	...	500 "

Or very good also—

Iodine of ammonium	...	...	25
" sodium	...	...	20
" cadmium	...	...	40
Double brom. of cadmium ammonium	...	...	35

120

Silver bath	...	...	100 grammes
Distilled water	..	...	100 "
Iodized with 5 drops of a solution in water—			
Of water	...	...	100
Iodide of potassium	...	...	4
" cadmium	...	...	5
Iod. tincture	...	...	1

110

* From which 100 cubic cent. from the iodizing solution.

"Make aside a solution of—

Acetate of copper ...	100	} 10 per 100
Water ...	1000	

"Acetic acid enough for to aid to the dissolution, boil, let cool, filter, keep in bottles.

"You make so your developer. In a bottle you put—

Water ...	900
Sulphate ...	50

You dissolve and add—

Acetic acid...	20 to 25 cub. cents.
Solution of acetate of copper	35 to 40 "
Alcohol ...	30 "

"Could veil immediately, will be better the afternoon or the day after; wants to be tried for the most favourable moment.

"Kept itself good four or six days, will become red; can be employed for intensifying with a few drops of nitrate of silver.

Intensifier.

Solution of pyrogalllic acid in alcohol ...	10 to 100 cub. cents.
Water ..	1000 "
Alcohol solution of pyrogalllic	50 "
Solution 10 to 100 citric acid in water ...	20 "

Employed with a few drops of nitrate of silver.

"Try to keep secret to yourself, and write me often. I shall always answer with pleasure to your letters, and should very much like to converse with you a kind correspondence.

"Tell me from your side what comes to your acknowledging which could be employed or tried favourably in order to overgrow the rapidity.

"I remain for ever yours very truly,

"F. BOISSONAS."

"Perhaps later shall I have still good news to write to you.

"Geneva, August 9th, 1878."

PHOTOGRAPHIC SOCIETY FOR IRELAND.

THE following circular, addressed to Irish photographers, explains the desirability of again making an effort to secure the pleasant intercourse and bond of union provided by a photographic society for Irish photographers. We cordially endorse the appeal, and shall be glad to receive correspondence on the subject.

"DEAR SIR,—The want of a Photographic Society in Ireland having been long felt, the present time is thought to be, for many many reasons, peculiarly fitted for the formation of such an Association.

"There are few amateur photographers who, at some time or other, have not felt the want of the assistance of others, to whom they could turn for help and encouragement in the midst of the difficulties and troubles to which all are subject, which beginners sometimes cannot overcome, and which often become serious to those of more mature experience. This want is admitted to be best supplied by the meetings of a society whose members are solely guided by a liking for their art, which all would be glad to advance by every means in their power.

"In many of the large towns in England such societies exist and prosper, and there can be no real reason why such should not be the case in Ireland.

"Dry-plate photography having lately been so perfected by the use of gelatine, a ready means is placed in the hands of amateurs of executing work in every respect equal, if not superior, to that obtained by wet collodion. Many who have tried dry plates, of which for some years past there has been a great variety, may be disposed to think this a somewhat overdrawn statement; but a fair trial of some of the gelatine dry plates now to be obtained leaves absolutely no longer room for doubt. This point admitted, it will be at once seen that the impediments of the wet process no longer becomes an absolute necessity, thus almost altogether reducing the labour formerly incidental to the practice of

landscape photography, which to many must have been a serious drawback.

"It is proposed to hold monthly evening meetings, when subjects interesting to those practising the art could be introduced and discussed, thus affording an excellent opportunity of improvement, which it is thought many amateurs, at present working by themselves at a great disadvantage, would be only too pleased to be able to avail themselves of. It is also proposed to hold during the summer months one or two joint excursions to places of interest, for the purposes of a field-day.

"These and many other details will, however, be matters of subsequent arrangement, to be decided by the representative council, to be elected at the preliminary meeting, which will be held at an early date should a sufficient number of amateurs respond.

"Trusting you can give the movement your earnest support, and awaiting the expression of your approbation, I remain, dear sir, yours faithfully,

ALEXANDER CONAN,

Hon. Secretary, *pro tem.*

Rosemeath, Sandymount Avenue, Dublin.

"To Amateur Photographers in Ireland."

Critical Notices.

ESTHETICS OF PHOTOGRAPHY. By WM. HEIGHWAY. (London: Piper and Carter.)

NOTWITHSTANDING the youth of photography, it possesses a somewhat extended literature devoted solely to it; but that devotion has been almost solely to the specially technical part of the new art science. Although art results constitute the essential final end of photography, the art aspects and possibilities have received but little attention comparatively. With the exception of Mr. Robinson's admirable work, "Pictorial Effect in Photography," no book until now has been written on the art side of photography. The volume before us is not unknown to our readers, since the bulk of it has already appeared in the PHOTOGRAPHIC NEWS; and, we think, all who have read the chapters as they appeared from time to time in our pages will be glad to possess them in their consecutive and connected form in a book. The circumstance to which we have referred precludes us, perhaps, from entering into any detailed criticism here. We may, however, without impropriety, say a few words about the book, which, as we have hinted, derives a new and additional value from appearing as a book, beyond what its contents possessed in separated chapters. Whilst it is essentially an instruction book, it is not only an instruction book, but a book of very interesting reading. There is no attempt to deal with art in its application to photography in a series of dry rules. The writer talks about the art possibilities of photography with a loving tenderness and intelligent appreciation which imply a complete belief in his subject. He leads the reader on until he is as much interested in the matter as the writer, and, having secured his reader's interest and confidence, he then proceeds to instruct him, and show him what may be done and how best to do it. We may add that whilst the subject is a great and an ambitious one, this is a small and modest a book, and should be in the possession of every photographer as a companion to "Pictorial Effect in Photography," by Mr. Robinson, to whom this little work is dedicated in the following modest, appreciative words:—"To H. P. Robinson (Author of 'Pictorial Effect in Photography') this book is inscribed as a slight expression of admiration of his works—photographic and literary—and in acknowledgment of the author's indebtedness to him for many hints, of which he has availed himself, and embodied in this book."

THE PHOTOGRAPHIC ART OF TO-DAY. By RICHARD WALZL. (Baltimore.)

THIS interesting little brochure is practically a somewhat ambitious trade circular. It is really the address of com-

munication of a photographer to his patrons and sitters. It is made interesting by sketches, historical and critical, of photography, and it is made instructive by abundance of valuable hints to sitters, as to when to sit, how to sit, what to wear, &c. Sizes, styles, prices, &c., are fully discussed, and advice offered. Two fine illustrations are given. Altogether, this is one of the most handsome little pamphlets of the kind that we have met with.

THE PRIZE PAPER: A Weekly Magazine for the Youth of Both Sexes. (London: J. HENDERSON, Red Lion House.)

WE rarely review in the pages of our essentially technical journal anything not specially addressed to photographic readers. Occasionally, however, general literature comes fittingly under our attention, because of its special excellence. The initial idea of this magazine is an excellent one. Its aim is to encourage budding talent in its readers, amongst whom it will find many of its contributors. Youthful readers are invited to send in their original efforts in writing tales, sketches, essays, and poems, and also in producing original drawings. Prizes are offered for first, second, and third degrees of excellence in different departments. In some cases kindly criticisms are given of the published contributions, showing points in which they are defective, and how they may be improved. The literary management of this novel experiment is in the hands of the conductors of the "Young Folks Budget," probably the most interesting and wholesome, the best and cheapest, of the numerous magazines for the young of the present day.

GARDENING ILLUSTRATED: A Weekly Journal for Town and Country.

A NEW, cheap, and excellent journal devoted to gardening, which, as many photographers are interested in horticultural pursuits, we recommend with confidence to our readers.

DARK-ROOM WINDOWS FOR GELATINE PLATES.

BY H. BADEN PRITCHARD, F.C.S.,

Of the General Photographic Establishment of the War Department. I HAVE recently been experimenting with ruby glass with a view to establishing a safe window for lighting the dark-room, a casement that would furnish sufficient illumination for development, while at the same time it would not fog the gelatine film. If you cannot trust your dark-room and its ordinary lighting, there is no other way for it but to stop out the light altogether until you have placed the film fairly in the developing solution, when you may let in yellow rays without risk. You must have light of some sort for proper development, however, and unless you are content with very little indeed, you run considerable danger, as everybody knows, of fogging the gelatine image.

The principal dark-room at Woolwich, being of comparatively large dimensions, has a casement as big as an ordinary house window. For general work, therefore, it is most efficiently lighted; but gelatine plates are no more to be developed therein than in the adjoining work-room. I decided, therefore, to have the window glazed with deep ruby, in the meantime making use of a dark-tent set up inside the dark-room for changing and developing gelatine plates. A sample of ruby glass was forwarded to me prior to the panes being fitted into the casement, and with this I made experiment. I chose a Dallmeyer No. 1B portrait lens for the test, placing inside the camera a Swan gelatine plate. The orifice of the lens was carefully closed by a piece of ruby, and an exposure in a good light was made. At the end of three minutes the slide was shut down and the plate developed. The result was a well-defined though faint image of a factory opposite, whose roof and chimney were very well rendered.

A second experiment was made with a similar gelatine plate, with the same lens and the same exposure, but this time with two thicknesses of ruby in front of the lens. On development, after exposure, as I have said, for three minutes in a good light, there was the same image, rather fainter, it is true, but roof and chimney as plain as ever.

These results at once brought me to a standstill, for although I had contemplated a window of double ruby, this second thickness availed nothing in the presence of such sensitive plates. Other samples of glass were obtained, but with the same result, and when the supply of samples ceased, I bethought myself of trying orange in conjunction with ruby. The plan succeeded: I found that two thicknesses of ruby and one of orange at once gave me a medium through which the light entered without any deleterious effect upon the gelatine film. A single thickness of deep ruby and one of orange was likewise, I found, capable of protecting a gelatine plate for three minutes in a camera fitted with No. 1B of Dallmeyer. So that photographers, instead of going to the expense of a double window of costly ruby, will find that if they still continue to employ their old orange casement, one thickness will answer the purpose. Indeed, as I have shown, two thicknesses of ruby is not to be depended upon alone, and I believe that if a photographer desires to have plenty of light in gelatine development, he must perforce make use of orange light and ruby light combined.

I do not suppose my remarks have anything of novelty about them, but as everybody, "more or less," is busying himself with the gelatino-bromide process, it behoves all to contribute their mite. The proper lighting of the dark-room is of the first importance, for clear and brilliant negatives can only be secured by the banishment of all hurtful illumination.

Correspondence.

ILLUSTRATIONS OF WORKING CARBON.

SIR,—In speaking of the value of the illustrations to Mr. Foxlee's paper on the carbon process, it is an error that I suggested the reproductions should take the form of a "presentation print for next year." I must leave the South London Photographic Society to do as they think best, or any other way by which photographers may become possessed of these valuable illustrations.

I cannot help thinking but that if photographers could see them, and have a description with them of the conditions which can produce such results, a great impulse is likely to be given to the carbon process, and many would try to work it who do not now.—Yours respectfully,

GEORGE COLLINS.

WORKING GELATINE PLATES.

SIR,—The wide and increasing interest now felt, as shown by the correspondence in your columns, may, I trust, induce you to give me opportunity to recall to your readers a few of the considerations which tend to success in portraiture and landscape work on the new rapid gelatine plates.

I may premise by reminding those of your correspondents last week who ask Mr. Nelson to publish his process, that the fullest possible working details of gelatine plate-making have repeatedly been published. There are very excellent reasons why few succeed, as they who try will soon find out. Those of your readers who live in the country, and did not have the opportunity to hear the interesting discussions at the Photographic Society, and to see the pictures and negatives then shown, or to join in the even more pleasant informal conversation after the regular meeting was dissolved, can have little idea of the perfection to which the new process has been brought. Not only are gelatine negatives as good as collodion, but they contain that peculiar "soft vigour" and roundness

and sweetness which are only obtained from collodion at its best. But many have failed, and many more will do so, and they will always be able to blame their plates, just as aforetime they blamed the bath.

First let me call attention to the stern and absolute necessity for ruby light. It may be said that I myself worked in orange light. True, in dull cold weather, with bleak N.E. wind; but when spring came I had fog, and gave it up. I bought my experience, and value it. The shadows of gelatine plates should be perfectly clear glass, and those parts of the plate which have been shielded by the frame should be so also; until this is the case, your light is not right unless you have an improper proportion of ammonia in the developer. The earliest experience of most experimenters is fog and flatness; many never surmount it, because they do not credit the real causes.

Gelatine plates are infinitely more sensitive than any "lightning" or other process used, and consequently over-exposure for one thing, and improper quality of light in the developing room, soon tell the mistake. Try developing a plate by an artificial light protected by ruby glass—you will then get a standard to go by. Let me, for a moment, diverge to explain the difference between developing by ferrous oxalate and alkaline pyro. The former is a very simple and convenient method, but it has the disadvantage that the preparation which is used is continually changing, and as it changes, so does the time of development vary. It is very tedious for any amount of work, but it is simple, and all should learn by trial what can be done by it.

Alkaline pyro is preferable, and is employed by a large majority. With the most perfect plates no bromide is necessary as a restrainer, and the time of exposure is consequently much shorter. If bromide, however, be thought necessary, it should be very sparingly employed on commencing development. During development a piece of card should be in the right hand, to shield the dish from direct rays from the source of light. The system of intensification afterwards with silver is one to be resorted to as rarely as possible. The worker will soon find what his negatives should look like, and act accordingly.

Failures are fewer than with wet plates, but a fresh set of precautions are necessary all round. Long washing after fixing is very undesirable; it should be rapid and effective. The use of alum to avoid frilling should not be necessary, but in certain states of the atmosphere is useful. Those who prefer to immerse in alum before fixing, or to mix alum with the hypo., are on the safe side, but it should rarely be necessary from frilling or swelling up of the films.

I have had the question put more than once, Can you obtain on gelatine plates the highest requirements of modern portraiture? I have no hesitation in replying in the affirmative.—I am, respectfully, SAMUEL FRY.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The usual monthly meeting took place on Thursday, the 8th inst., the president, Mr. CHARLES ADIN, in the chair.

The minutes of the previous meeting were read and confirmed.

The *Bulletin* of the Belgian Photographic Association was laid upon the table.

Mr. W. B. WOOD read a paper on "Collodio-Bromide Emulsions" (see page 244), and exhibited a number of very excellent prints from negatives by the same process.

The CHAIRMAN thought these photographs were about the best collodio-bromide emulsion work he had seen produced by any of the members, and a special vote of thanks was awarded to Mr. Wood for his communication.

The Honorary Secretary (Mr. W. J. CHADWICK) exhibited a very small photometer, the invention of Mr. W. B. Woodbury,

and explained its use to the printer, and also as a guide to the exposure of negatives.

Mr. WIGGLESWORTH exhibited a small negative by the zinc bromide process, and at some length explained that the negative, like all others he had taken, was not a satisfactory colour; he wanted a warm brown colour.

The SECRETARY said he liked a greenish tinge.

Mr. WIGGLESWORTH said he liked a sort of greenish brown.

The SECRETARY exhibited three small negatives, which were exposed and developed by his younger brother, Master John A. Chadwick, a boy thirteen years old. They were on Wratten and Wainwright's ordinary gelatine plates, and were developed with pyro. These negatives were examined by the whole of the members, and pronounced very good work for one so young.

Mr. GREGORY brought forward several portraits, most of which were from gelatine dry plates, and he also explained the particular way or modification in which he had developed these excellent pictures.

Mr. GARSIDE presented some prints from the negatives taken by artificial light, a few meetings ago, and offered to supply any member of the Society with a print gratis, not as a specimen of good or excellent portraiture, but a reminiscence of the experiment.

The SECRETARY exhibited a series of six cabinet photographs (instantaneous photographs by Messrs. Wratten and Wainwright on their instantaneous plates). He (Mr. Chadwick) also exhibited a couple of pantoscopic prints which he had taken a few years ago, the same figure of a gentleman being introduced three times on the one plate. These were examined by the members with great interest, many of them never having seen or heard of such photographs before. Mr. Chadwick said that the inconvenience of wet collodion having to be used with the pantoscopic camera had in a great measure caused it to fall into disuse, but now that gelatine had made such rapid strides, the inconvenience of working with the pantoscopic camera would be considerably diminished.

The CHAIRMAN touched upon the out-door meetings, and explained that nothing had yet been decided, but that in all probability the Council would arrange for a photographic excursion as soon as the weather was favourable.

Mr. NORON expressed himself highly satisfied and delighted with the results of gelatine plates. He thought it was a "grand process," the process of the future, and proposed a wholesale vote of thanks to the gentlemen who had brought such excellent subjects of interest before the meeting.

EDINBURGH PHOTOGRAPHIC SOCIETY.

The seventh ordinary meeting of this Society was held in 5, St. Andrew Square, on the evening of Wednesday, 7th May, JOHN LESSELS, Esq., president, in the chair.

The minutes of previous meeting having been approved, Miss Jessie Fullarton, Mr. Robert Murray, Mr. James Simpson, and Mr. William Carlile were unanimously elected ordinary members of the Society.

Mr. ROBERT BOW, C.E., F.R.S.C., then delivered a lecture on the theory of colour sensation, illustrated by diagrams and numerous interesting experiments. The lecture embraced Mr. Bow's latest researches and discoveries in relation to this subject, which, for many years past, he has made his peculiar study. He recapitulated some of the more interesting points of two lectures he gave before the Society in the year 1870, on the theories of colour sensation, and on theories of colour decoration; and gave some of the leading proofs of the correctness of the views first announced by Wollaston and Young, that the simple sensations of colour were red, green, and violet-blue. He noted that there had been some slight difference of opinion held by the followers of Wollaston—Herschel and Helmholtz naming the most refrangible colour violet. He adduced reasons for believing that the correct colour was between these two, viz., a violet-blue, such as given in appearance by a moderate thickness of deep-coloured solution of ammonio-sulphate of copper. His chief argument was this, that the pure colours are not seen with a highly illuminated spectrum; the colour near H, under intense illumination, becomes of a sickly, faded, pinky-purple character, and the blues and yellows are unduly developed, arising from the principle that no one colour sensation can be intensely excited without sympathetically exciting at the same time the other two, and usually one more so than the other; thus in the Wollastonian spectrum, given by the light from the sky, and a medium width

of aperture, we have red, a narrow strip of orange yellow, then the blue and violet; but as the aperture is gradually reduced, the blue becomes more violet from reduced excitement of the green-seeing nerves, while the violet becomes bluer from the reduced sympathetic excitement of the red-seeing nerves, so that eventually the colour above the green becomes uniformly violet-blue. Another original argument which Mr. Bow advanced was this: the length of the whole visible spectrum is dependent upon the degree of illumination, and becomes greatly contracted on making a great reduction in the supply of light. Now if there be truth in the theory that the colours are due to three irregularly superimposed spectra, each spectrum should undergo contraction independently when the illumination is reduced, and this is really the case; thus the lighter blue first disappears from the contraction apart of the violet-blue and green; and then, on a very great reduction of the light being made, the yellow band itself becomes dulled. He had attempted to register the centres to which these contractions tend, and gave, as rough approximations, for red, C 82 D; for green, D 80 E; and for violet-blue F 37 G, on the ordinary prismatic spectrum, corresponding with Angstrom wave-lengths of about 6,000, 5,375, and 4,610 respectively, but the last determination is not so trustworthy as those for red and green. As is well known, when the light is very greatly reduced, the red-seeing nerves, compared with the others, become much less excited, and so when the reduction of the light is made very extreme, no red is embraced in the spectrum. It may, for instance, begin at D 38 E, and rise to above F 54 G, and show a feeble green below a point about E 81 F, and a feeble violet above the same.

The PRESIDENT, in a few appropriate remarks regarding the importance of the subject selected by Mr. Bow, invited Mr. Norman Macbeth, A.R.S.A., to express his views as to the practical value of Mr. Bow's investigations.

In response, Mr. MACBETH said that this lecture by Mr. Bow was one of his happiest efforts. He did not know of any one better qualified to take up the subject, and he had looked forward to this evening with much interest, expecting to hear something of real value, an expectation which had in no sense been disappointed. He must, however, remark that, notwithstanding the theories advanced by Mr. Bow, and in spite of the conclusive experiments with which he had supported them, he was at a loss to see how he, as an artist, was to make use of them. He would like to know from Mr. Bow how it was possible for him, with ordinary pigments, to produce a yellow, if red, green, and violet were the only colours available. True, Mr. Bow had shown how this was to be done under peculiar conditions, not, as he could see, available to an artist. He owned he was greatly taken by surprise when he saw the various colours evolved from the mingling of tints which a painter would never dream of employing if he desired such results, and he desired information how he could make a practical use of the facts demonstrated.

Dr. HUNTER said he failed to understand how the combination of the three primary colours suggested by Mr. Bow could be of any practical value to the artist. If all known colours are produced by the mixing in definite proportions of these three colours, then an artist has no need of any but these three; yet the artist's colourman provides scores in every variety of tint, and the artist is glad to avail himself of them. He differed from Mr. Bow in his idea of primary colours, and held that the most enlightened decorators of all ages had employed reds, yellows, and blues as the foundations of all their colour combinations.

Dr. THOMSON said he had listened with very great pleasure to Mr. Bow, the more so as what he had heard was not a re-hash of old ideas, but the outcome of original investigations, and showed that the lecturer could speak with an authority based upon practical acquaintance with his subject. As he understood the discussion, he considered the fundamental ideas of the lecturer and the gentlemen who had just spoken were upon different bases—for whereas Mr. Macbeth and Dr. Hunter only entertained the material pigments as found in the colour-box, Mr. Bow dealt only with the pure impressions made by these colours as illustrated by his practical demonstrations.

In replying, Mr. Bow stated that the direction the discussion had taken was that he had anticipated. He found it very difficult to separate the idea of paints from colour sensations. His whole arguments were based on colour sensations, and not on pigments.

A hearty vote of thanks to Mr. Bow closed the meeting.

The first out-door meeting of the session was held on Friday, 10th May, the locality selected being Dalkeith Park, which, by the kind and special permission of His Grace the Duke of Buccleuch, was thrown open to the members of the Society. The party started from the Waverley Station per North British Railway shortly before ten o'clock; the weather being favourable, a pleasant day's outing was anticipated. Dalkeith is situated about six and a-half miles S.E. of Edinburgh, and is quite an interesting country town; the ruins of the old parish church, which stand near the centre of the town, impart an air of antiquity to it. Judging from the character of the details, this building must have been originally one of great beauty, and an imposing architectural feature in the rural landscape. On arriving at the park, the party was met by the chief keeper, Mr. Chewler, who had been instructed by His Grace to show the grounds and be in attendance for the day. He conducted the party to the most interesting and beautiful portions of the park, thus saving a deal of labour and valuable time. The public being excluded from those portions of the estate which the party was allowed to visit, and none of them having been there before, gave the locality a peculiar interest.

The views are truly beautiful, varied, and extensive, and a richer field (photographically speaking) it would be difficult to imagine. An energetic worker, even with the most favourable weather daily, could not exhaust the field in a month. About fifty dry plates were exposed. The light, excepting for a short time in the forenoon, was everything that could be desired, and the hope was reasonably entertained that some very beautiful pictures had been secured.

The party left the grounds about four o'clock, and adjourned to the "Cross Keys," where a comfortable dinner awaited its arrival. Ample justice having been done to this, and after proposing the success of the Edinburgh Photographic Society and its out-door meetings, the party returned to town delighted with the day's excursion.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY.

At the meeting of the Association held on the 21st March, Professor VOGEL in the chair, the principal subject of discussion was a communication from Herr OBERNETTER on the gelatine emulsion process.

As regards sensitiveness, Herr Obernetter observed that it may be attained to any required degree by mixing isinglass and albumen with the gelatine, but the more sensitive the plates, the greater is the difficulty of preparing them, of guessing the right length of exposure, of developing, &c.: all the work must be carried on, it may be said at once, in complete darkness, and that is no easy matter. At the present time the author of the communication is in the habit of working with an emulsion requiring an exposure about one-fifth of that of ordinary wet plates, and for all purposes such a degree of sensitiveness is amply sufficient. For working with emulsion plates of this kind any dark room in which work is commonly carried on, and which is not too much lighted, can be used. The following are the formulae:—

Ammonium bromide	...	...	...	...	28
Silver	...	...	...	...	44
Isinglass	...	...	...	...	25
Water	...	...	...	...	250

This is allowed to ripen for twenty-four hours, and another day is used for washing; then is added—

Gelatine (German)	...	...	...	...	25
Albumen	...	...	...	...	20
Water	...	...	...	...	750

The whole gives 1,000 emulsions.

The preparation is simple, but requires great care. The emulsion sets completely in about five minutes, and the plates can then be placed upright to dry in any place where the light is kept out. With the aid of calcium chloride or sulphuric acid the drying will take two hours.

The transport of dry plates in a stato ready to be used Herr Obernetter was opposed to, because it is too troublesome for the sender, and too expensive for the consumer. He considered the preparation of the plates by his method, particularly when they have received a good cleaning in soluble glass, to be as simple and certain as that of ordinary collodion plates. In using the emulsion, however, the utmost care must be taken to prevent any access of light; all the slides, cameras, and dark room,

must be therefore perfectly light-proof. People imagine that all is right when they have dark yellow window panes or lampshades, and forget the think by the side of the door or window, which may cause any amount of mischief. With Nelson's gelatine and a fourteen-day emulsification, the author had attained as high a degree of sensitiveness as in the English plates; but an emulsion of this kind only sets at a temperature of from 5° to 6°.

The great point, in his opinion, is the rapid setting. He had not observed any of his emulsion to decompose or putrify, though he had had it standing in a warm room since Christmas. He believed that silver bromide must be an antiseptic, but to be on the right side, in anticipation of the coming warm weather, he now added some salicylic acid, which does not affect the sensitiveness.

Accompanying this communication Herr Obernetter sent some bottles of his emulsion, which were distributed to the members present for trial.

Professor VOGEL has experimented with some of Obernetter's plates, but, in consequence of his ignorance of the latter's formula for developing, he had developed them as best he could. Notwithstanding this, he had found them to quite come up to his expectation, and he showed a perfectly exposed negative which he had taken in one-fifth of the time of that required for a wet plate. He also showed a plate which had been exposed by Herr Obernetter on the 12th January last, and had been sent to him (the speaker) to develop; the same had given a perfectly pure negative—a view of an interior.

As regards the use of alcohol with gelatine emulsion, as recommended in the paper, Herr FAHLING remarked that he also had experimented in this direction. He had laid a freshly-coated gelatine emulsion plate in a pan of alcohol so soon as it had set, and found that the alcohol extracted all the water from the film, and occupied its place. The plate was quite dry in about two hours after its removal from the pan.

Dr. Vogel, however, remarked that Obernetter's emulsion treated in this way would dry in half an hour.

Herr SELIGMANN expressed surprise that Herr Obernetter should recommend the addition to the emulsion of albumen, which would certainly act as a restrainer. On one occasion, when, for the sake of experiment, he had himself prepared an emulsion of albumen, and had allowed the plate coated with it partly to dry spontaneously, partly to coagulate by immersion in a not too weak silver bath, he had found it to become so insensitive as to be useless.

The PRESIDENT pointed out that already in 1846, before the discovery of collodion, attempts had been made to obtain a negative on glass by means of an iodized film of albumen, when the same great want of sensitiveness of this substance was observed. Herr Obernetter, however, must have had a different experience, for it will be remembered that in the paper just read he laid great stress on the presence of albumen in the development; he had given particular instructions not to lay the plate in water before developing, with the object of preventing the albumen in the film from being dissolved out.

Herr HARTMANN read a very interesting and complete paper on the anatomy of the human head, with particular reference to everything that had an influence on its external appearance, and therefore of importance for the portrait photographer. For illustrating his paper, he exhibited a natural skull and a model of the muscles of the head, with a drawing on an enlarged scale of the same. He thought, however, that the veins and arteries of his model were made too prominent.

Dr. FRITSCHÉ explained that in the preparation of which the model was a reproduction, the blood vessels would be disproportionately distended in consequence of the injection to which they had been subjected.

At the next meeting of the Association, on the 4th April, Herr PRUMM, in a speech of great feeling, proposed that the honorary membership of the Society should be granted to the President, Dr. VOGEL. According to the statutes, the Committee of Management were empowered to confer this honour on men distinguished in science and art, and on those who had rendered special services to photography in general or to the Association in particular; to make this distinction still greater, it has been but sparingly bestowed. The completion of the tenth year of the existence of the Berlin Association for the Promotion of Photography seemed to the speaker to be a most favourable opportunity for the members to show the respect and

admiration they entertained for their president, to whom the flourishing condition of the Society was in great part due; and the most adequate way of doing so seemed to be to take advantage of the statute above alluded to. The Committee at their last meeting had come to the determination of electing their President, Dr. Vogel, an honorary member of the Society, and has begged the general body of the members to confirm their decision. The proposition was received with general acclamation, and three rounds of cheers for Dr. Vogel. In returning thanks, the latter explained that at first he had some hesitation in accepting this great distinction, the climax to all the proofs of devotion and love he had experienced from the members of the Association, because perhaps outside the Society it might be misinterpreted; but on consideration he felt that his conduct in following the example of Dr. Hornig could not be open to exception; the latter had also been nominated to the honorary membership of the Photographic Society of Vienna, whose president he is; he (Dr. Vogel) would therefore gladly accept the honour now proposed to him.

A letter was read from Mr. Muybridge, of San Francisco, whose instantaneous photographs of the trotting and galloping action of the horse had been shown at a previous meeting of the Association. He described in this letter the manner in which these photographs were taken—that is to say, by means of six cameras placed close to each other, and so arranged that the shutters were electrically opened at intervals of $\frac{1}{25}$ th of a second. The writer intends to submit other animals and also human beings to similar experiments, and hopes to attain results of great interest and importance to the student of animal mechanics.

Herr SELIGMANN reported on the results of his latest experiments with dry plates. He had exposed some of Wratten and Wainwright's plates in the studios of Herren Prumm and Schaarwachter, using the iron oxalate developer, and found the requisite time of exposure to be about one-tenth of that of a wet plate. The plates which were developed in the first named studio exhibited very nearly the same brilliancy and general characteristics as wet plates; those in the studio of Herr Schaarwachter were somewhat greyer in tone. This difference, in the opinion of the speaker, was due to the iron oxalate developer used at Herr Prumm's being freshly made, while that of the other studio was some days old—another proof that this developing solution, to be effective, must be recently prepared for use. He had likewise tried plates by Messrs. Wegner and Motter, and was able to speak in their favour. Herr Schaarwachter also exhibited some negatives on gelatine pellicles that he had received from Herr Wilde; they are prepared as follows:—A glass plate is first coated with raw collodion, then with gelatine, and next, after being dried, with emulsion. It is then exposed, developed, varnished, and the pellicle finally drawn off the glass.

Herr KUNTZE submitted some plates in which he had found a number of peculiar small black spots. This imperfection he believed to be due to too great acidity of the silver bath, for when the latter was neutralised with bicarbonate of soda the defect disappeared.

Herr REICHARD doubted whether the acid was the cause of the spots, for silver baths had been often for some reason or other acidulated to an excessive degree without producing a similar appearance.

Herr SCHAARWACHTER's experiences agreed with those of Herr Kuntze. An acid silver bath with a neutral collodion produced the spots, but when the collodion was also made acid, then the evil was cured.

Herr PRUMM took occasion to impress on the members present the importance of bringing up for discussion at the meetings of the Association the numerous defects that were observed in the collodion process, as affording the best opportunity for learning how to get rid of them. At the present time, photographers in Berlin had to complain of two causes of the bad or inferior results of their work: one of these was the town water, which, since it had been derived from a new source, was everywhere disapproved of; the other was the collodion, which seemed lately to be subject to loss of colour. To obtain good photographs with such a collodion, it must necessarily be acidulated, and that to a degree never previously attempted; also the acid must be kept continually renewed. As regards the spots to which Herr Kuntze had drawn attention, the speaker would have been inclined to seek for the cause in the albumen substratum, were it not that they had been found also on plates in which a substratum had not been

used. Dust particles, especially those in which lime occurred, were very likely to produce spots on albumen, as he had himself often had occasion to observe. Generally the alkaline action of lime must be prejudicial, and the presence of lime in cotton wool, which had been spectroscopically demonstrated by the President at one of the meetings of the Association in the summer of last year, might be the origin of many an imperfection.

Herr QUIDDE complained that in winter, particularly when it was a cold one, he had to contend with many causes of failure which disappeared with the coming of a warmer season; this was especially the case with defects in the collodion, which also were now more common than formerly.

Herr JOOP related the case of a laboratory where the work had always been satisfactorily executed, until one day suddenly all the plates showed signs of fogging. This was found to be due to the fuel used for heating the room; formerly this consisted of coal exclusively, but was changed to brown coal and anthracite, and from the date of the change the fog made its appearance, but vanished again when wood was burned in the stove.

Herr BOLL believed that in this case defective heating appliances must have been at fault. He had himself always used anthracite as fuel without observing his plates to fog.

Herr VON ROUZELÉN pointed out a circumstance which rendered the discovery of the cause of defects extremely difficult. The photographer never knew what occurred to his chemicals when his back was turned. It often might happen that a half-educated assistant, partly out of ignorance, and partly out of inquisitiveness, would tamper with the reagents, and thus become the author of inexplicable failures.

Herr SELIGMANN exhibited a travelling camera constructed by Rouch, in England, for plates ten inches square. The same he showed to be exceedingly convenient and compendious, and to pack into a space of 12 inches square by 3 inches high. It could be bought, he said, for 120 marks (£6), but he had found it necessary to introduce many improvements, which increased the price by 80 marks (£4). Some of the parts, he thought, were decidedly too weak, and he had replaced them by others of stronger construction; he had also made some additions to improve the stability.

The meeting closed with the reading of the annual report of the committee of management; the financial statement was read by Herr BERGMANN, the report on the library by Herr HARTMANN, and an account of the condition of the portfolio by Herr SELIGMANN.

Talk in the Studio.

"BRINGING HOME THE MAY."—One of our comic correspondents pays Mr. H. P. Robinson the compliment of quoting the title of his famous picture "Bringing Home the May," as the side-heading to a comic sketch illustrating the chilly, unreasonable weather.

To Correspondents.

F. B. Y.—In your second batch of prints the toning bath is almost too new and active, and the negatives are not good. They are not quite brilliant enough to permit sufficiently deep printing to give a rich well-toned print. The bath will improve daily. We see no reason to condemn the paper.

H. W. H.—We should not think that metagelatin is the best substratum to collodionize plates, on account of its slow setting qualities. It may be made by long continued application of heat to the solution of gelatine, with or without the addition of a little acid. Diluted albumen forms the best substratum we know. 2. So far as our experience goes, the sulpho-cyanide of gold toning bath is quite safe. We have only used it for collodio-chloride prints, and have never known a case of fading. There is no such decomposition or liberation of sulphur as should cause apprehension.

CYMRIG.—A piece of wood with a strip of pure black india-rubber (not vulcanized) cemented on its surface is the proper thing for a water-tight top to a silver bath. This will not injure the solution; almost anything else will do so.

T. GRESHAM.—Thanks for your suggestion, which we will print in an early number. We do not know of any English translation of the French manual in question; any English book-seller will be able to order it through an agent. There are various foreign publishers in London who will undertake such agency, such as Trubner, Dulau, and others. The price we do not know. The duplication you point out is somewhat amusing. Probably some contributor to the *Times*, rather than the managers of the journal itself, neglected to make the necessary acknowledgment. A little more exposure, or a brighter light, is the chief want of your prints.

OPERATOR asks where directions for the preparation of rapid gelatin plates may be found. We are almost tempted to ask where, in the photographic literature of the last twelve months, such directions cannot be found, as this has been the staple subject to which discussions in societies and articles in journals have been devoted; and in our YEAR-BOOKS and in the NEWS for the last few years many articles have appeared. One of the most rapid of published processes is that of Mr. Bennett, described on p. 511 of our last volume. 2. Captain Abney's book will give you full information. 3. Both the emulsion, the sensitive pellicle, and the plates are procurable, as you will learn on examining our advertising pages. In our last YEAR-BOOK you will find the fullest collection of advertisements referring to the subject.

CHROMOTOPISTS.—We cannot give you certain information as to where or how the paper is procurable, but will endeavour to ascertain. Our accounts of Boll's researches in relation to "visual purple" are derived from foreign scientific journals as they have appeared from time to time. Accounts of such matters relating to foreign science are contributed to our pages by members of our staff who read the various foreign journals for the express purpose of condensing anything of interest to our readers.

AMATEUR.—There is no work devoted to the subject of backgrounds or to special effects in backgrounds or modes of obtaining them.

J. C.—We have not any definite information as to the comparative excellence of French and German mounts. We think it is probable that there are good and bad produced in each country.

GLASS-HOUSE.—To secure a north side light it is of course necessary that the house should stand due east and west. The ends being east and west should be opaque, and south side may have glass to be excluded by blinds when the sun shines; but will be useful without blinds in dull weather.

J. B. D.—It appears to be generally conceded that more rapid results can be obtained with gelatine than collodion; but that collodion emulsions are more manageable. For details of a good collodion emulsion read Mr. Cooper's article in our YEAR-BOOK.

O. P.—Many thanks. We will give the suggestion in an early number.

ANXIOUS.—There is really no difficulty in producing collodion positives either on glass or on ferrotype plates; but you must get rid of some of the cardinal ideas in producing negatives. Your chief fault appears to be a tendency to over-develop. Positive development must be much more rapid than that necessary for negatives. Try again, bearing this in mind.

Several Correspondents in our next.

PHOTOGRAPHS REGISTERED.

- Mr. CHIVERS, High Street, Marlboro',
Two Photographs—Groups of Members of Wilts and East Somerset Congregational Union.
- JOHN CARDER,
Photograph of Wreck of *Princess Alice*.
- Mr. H. LORD, Huddersfield.
Two Photographs of Meltham Mills Prize Brass Band.
- Mr. BOAK, Driffield.
Photograph of Unveiling of Monument to the late Potto Brown, at Houghton.
- Mr. T. V. WHITE, Reading,
Six Photographs of G. Palmer, Esq., M.P.
- Mr. COCKING, Peckham.
Photograph of Rev. A. Tooth.
- Mr. A. WYATT, Fareham,
Photograph of Fareham Turnpike Gate.
Photograph of Blackbrook Turnpike Gate.
Two Photographs of Cams Turnpike Gate.
- Mr. SEED, Hereford,
Photograph of Ruins of Whitney Bridge after the Flood.
- Mr. W. J. BYRNE, Richmond,
Four Photographs of Prince Teck.
Three Photographs of Lt.-Col. Ommamy.
- Mr. GREGSON, Luton, Beds.,
Photograph of Illuminated Address to Prince of Wales from Mayor, &c., of Luton.
- Mr. F. BROWN, Walsall,
Five Photographs of Sister Dora.
- Mr. SAUTER, of Luton,
Photograph of two Dolls dressed in Straw Plait.
Photograph of Wickerbasket named "The Paulina."
Photograph of fire Baskets.

The Photographic News, May 30, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

WOLFRAM'S INVESTIGATIONS OF PYROXYLINE—THE CHALLENGER AND POLAR EXPEDITIONS DEPICTED BY PHOTOGRAPHY.

Wolfram's Investigations of Pyroxyline.—A paper upon pyroxyline that appears in *Dingler's Journal* can hardly be passed over without remark, albeit, in the face of other results by well-established authorities, these last researches must not be too readily received in all their integrity. The author of the paper, a German chemist, M. G. Wolfram, tells us, in effect, that there is only one description of pyroxyline or gun-cotton, whereas, as our readers know very well, we have hitherto distinguished two broad classes, that may be roughly termed soluble and insoluble. The former is photographer's gun-cotton, a lower compound (that is, less nitrated, or containing less nitrogen) hitherto known as di-nitro-cellulose; and the military gun-cotton, or tri-nitro-cellulose, that is more highly charged with nitrogen. It may happen that the military gun-cotton is, to a certain extent, soluble in ether and alcohol, just as photographer's cotton is found sometimes not to be wholly soluble; but, as a general rule, the two kinds may be described as soluble and insoluble, and are regarded as finished products in their way. According to M. Wolfram, however, there is only one real nitro-cellulose, and that should contain 41.89 per cent. of NO_2 , or nitric oxide. If a cotton, after treatment with the acids, is found to contain more NO_2 than this, then the surplus nitric acid is in the pores, and can no longer be regarded as a component part of the gun-cotton. Again, if the steeped cotton proves to contain less than 41.89 per cent. of NO_2 , then the conversion of the cotton is not complete, and there will be found mixed with the gun-cotton a certain proportion of non-nitrated cellulose. This is M. Wolfram's chief statement, and it differs, we need hardly say, from what has already been laid down by authorities on the subject. It is certainly a fact that samples of photographer's gun-cotton can be produced which are entirely soluble in alcohol and ether, and which are no other than di-nitro-cellulose, or, in other words, the lowest form of pyroxyline, and contain, therefore, according to M. Wolfram, non-nitrated cellulose, or unconverted cotton. If they contain non-nitrated cellulose, how is it, we ask, that the mass dissolves so readily and without residue? This is a point that we should like to have more fully explained, for if we can prepare a product from cotton which will entirely dissolve in ether-alcohol if it has not been acted upon too much or too little by certain agents, there is surely good ground for calling such product a definite and finished body. M. Wolfram says no, it is imperfect; and, to render it perfect, it must contain more than double as much nitrogen, and become what he calls pentanitro-cellulose. This, however, is insoluble; hence we are to conclude that what photographers call pyroxyline is not really so, but gun-cotton mixed with ordinary cotton. We do not think many chemists and photographers will be found eager to believe this, but we are bound to say that M. Wolfram's statements are not all of them so difficult of credence. In fact, in one portion of his paper he seems to bear out a statement that is made by Dr. Van Monckhoven in our last YEAR-BOOK. Dr. Monckhoven therein shows how that one and the same pyroxyline may be employed both for dry and wet plates. For dry work a more pulverulent film, and one easily permeable by reagents, is desired, than is necessary for wet plates. To prepare a pyroxyline proper to dry plates, the acids are dilute and the temperature very high, when the result is a gun-cotton of a pulverulent character and in short fibres, yielding a film that is no longer transparent, but semi-opaque and

porous. Strong acids and a low temperature, on the other hand, give a pyroxyline that yields a colourless and resistant film. But either a semi-opaque and pulverulent film on the one hand, or a transparent and resistant one on the other, may be secured from the same gun-cotton, Dr. Monckhoven tells us in his paper, if care is only taken to modify the nature of the solvents employed. M. Wolfram confirms this statement of Dr. Monckhoven, and says distinctly that the film formed by evaporating a solution of pyroxyline is not merely dependent in its character upon the pyroxyline itself, but upon the solvents employed. M. Wolfram further says that the solubility of a gun-cotton is considerably influenced by the attack of sulphuric acid employed. The sulphuric acid has the effect of toughening the fibre, and the more easily a cotton fibre is toughened, the more difficult is it to turn the fibre into gun-cotton. One other point deserves attention in M. Wolfram's paper, especially by photographers. A little while ago, as we know, there was a good deal said in the photographic world about the addition of gelatine to cotton in the preparation of dry-plate gun-cotton, Colonel Stuart Wortley being one of the advocates of such a measure. The collodion film was thereby improved and rendered more sensitive, it was averred, although it was evident to all that the gelatine must have been dissolved on the addition of the acids. M. Wolfram, however, in his paper, tells us that a pulverulent pyroxyline will be secured by this means, and a pulverulent pyroxyline is, as we know, of all things the best suited for dry-plate work. By impregnating cotton with gelatine, he says, or by adding gelatine to the acid mixture previous to nitration, this modification of the pyroxyline is brought about. It will be interesting to see how far M. Wolfram's published investigations will be challenged in this country and abroad.

The Challenger and Polar Expeditions Depicted by Photography.—People are beginning to call out about the photographs of the Challenger expedition. It is now a long time since Sir Wyville Thompson returned from the cruise, and brought with him a valuable collection of negatives, made in every habitable and inhabitable corner of the globe. A large sum of money has been granted by Government for the printing of these negatives, but so far, it seems, no distribution of the pictures has taken place. We trust that, unlike the pictures of the Polar Expedition, they will not be printed in silver, but something less perishable. As their value lies more in the fact that they are records than anything else, permanence is an element that should not be forgotten, and seeing that there are several methods of permanent printing at our disposal, it is foolish in the extreme not to avail oneself of them. In the case of the Polar photographs, the pictures, although taken by public money, were kept out of the hands of the public in a most jealous manner. The few sets printed in silver were handed over to certain societies and institutions, in ill-contrived boxes, that hindered their inspection, and those who obtained the privilege of purchasing were asked to pay very much more than their cost. As to permitting the general public to purchase what was their own at cost price, such a thing seems never to have entered the heads of the Secretary of the Admiralty, or whoever else had the direction of affairs; and although the Polar negatives might have been duplicated a dozen times over if need be to supply impressions, the pictures are still rarities in their way. Whether the same narrow and parsimonious policy will be adopted in respect to the pictures of the Challenger Expedition remains to be seen; but as many of them possess distinct scientific interest, we shall probably have the scientific societies calling out unless the prints are properly distributed. Again, we hope that silver printing has been discarded, for unless the albumenized paper now manufactured is properly selected, no dependence can be placed upon the results. A series of prints upon cheap foreign paper would be of little value in the archives of a museum.

FRENCH CORRESPONDENCE.

REPRODUCTION OF COLOUR BY PHOTOGRAPHY—PROCESS OF M. CH. CROS—PROCESS OF M. DUCOS DU HAURON—THEORY AND PRACTICE OF THE TWO PROCESSES.

Reproduction of Colour by Photography.—There can be no doubt, I think, that the attention of a large number of experts is at present occupied with the problem of reproducing the natural colours by means of photography. The late Duke de Luynes, who had a steadfast faith in the ultimate solution of this problem, left by will a bequest of a considerable sum of money to be given as a prize to the discoverer of a means of fixing in the camera the colours as they are seen on its ground glass plate. It was argued by this noble patron of our art that as the human intellect had been able to obtain from light a spectrum with all the lines and colours completely rendered, so it must arrive at the point of compelling nature to surrender the other half of her secret. Since his death no one has ventured to claim the promised reward; it is still waiting like a rich heiress on whom a number of suitors are in attendance. The family of the testator, however, are so anxious to carry out his wishes that they wanted to give a portion of the accumulated interest of the legacy to M. Ducos du Hauron, who has achieved an approximation to the solution of the interesting question. It may be accepted as a true approximation, since the process of M. Ducos du Hauron is in perfect harmony with scientific principles; it is founded absolutely on the complex nature of the natural colours. M. Ducos du Hauron works on precisely the same lines as M. Ch. Cros, who so far back as the 23rd November, 1868, took out a patent for what he called "Colours in Photography—solution of the problem." The latter part of this assertion was perhaps slightly strained, but it remains a fact that M. Ch. Cros was the first to announce the ingenious process the discovery of which was effected simultaneously in two quarters. In the PHOTOGRAPHIC NEWS of the 16th May last, at page 229, the manner of working the application of the principle (for the processes both of M. Cros and of M. Ducos depend on the same) is explained—the building up of the natural tints by the superposition of three mono-chromatic prints. First a red, next a yellow, and then a blue print is taken, for by the use of these three colours the painter obtains all the tints that he requires, and it is by the decomposition of light into the same colours that we get the phenomenon of the spectrum. M. Ducos du Hauron, precisely the same as M. Ch. Cros, has taken advantage of a well-known law of physics in order to obtain the infinite variety of the tints of nature by combining in different proportions these three primary colours as they are called. As will be seen, the process is based on natural principles, and on that account it deserves serious consideration; but the question will be asked, will nature allow herself to be thus overcome, and will she in the end yield to these irrefutable arguments? It may be hoped so: she is an indulgent goddess, and when a part of her wealth has been taken by force, she often generously gives the rest of her own accord. In my last letter I alluded to the circumstance that very often the same discovery had been made in different quarters simultaneously, because it meets a want of the time. This is again the case with the invention of M. Ch. Cros and M. Ducos du Hauron, two investigators who were previously quite unknown to each other. Always true to the principles of justice, and without personal considerations of any kind, I shall endeavour impartially to place to the credit of each of these the share that is his due. I would not allow Daguerre and Niepce to be separated, because the facts of history can never be permitted to give way to considerations prompted by the spirit of provincialism; in the same way I cannot separate the two men who have opened up the road to the discovery of "Natural Colours in Photography." It becomes,

therefore, a peremptory duty to make known separately the considerations which M. Cros and M. Ducos adduce in support of the discovery. They may serve as a guide to those who are taking up the question, and may shed some new light on the facts which are already known.

Process of M. Ch. Cros.—To give his own words:—"In attacking the problem, I start from the following proposition, of which I shall give a proof: colours are principles which, like solid bodies, have three dimensions, and which, consequently, require three independent variables in all formulæ by which they are represented. It follows from this that if we had an instrument for measuring colour the same as the thermometer measures degrees of heat, it would require for each of the tints three distinct numbers to express their relations with one another. Hence, a figured analysis of any given subject or painting might be possible on such plan as this:—The surface could be divided into a number of contiguous squares, sufficiently small for the degree of detail required, and each of these could have their correct tint indicated by means of three figures. Thus each point of the picture could be measured by means of three magnitudes which could not be confused into one number. It may, therefore, be said that a painted picture has five dimensions, two for fixing the elemental points of the drawing, and three for giving the value of the tints. What, then, is registered by the photographic instrument? Nothing but the actinic intensity of light, which is translated into black and white and the intermediate greys. A single linear scale would be sufficient to determine each of the terms of this series from black to white; an ordinary photograph gives no indication of colour. The three kinds of primitive colour are the red, the yellow, and the blue. It becomes, therefore, necessary to take three different prints, one of all the points more or less red, a second of all the yellow points or those containing a proportion of yellow, a third of all the points containing blue. When we have obtained these three photographs they will be one of uniform tint, like ordinary photographs, but in the different shades of black and of grey; more or less dark they will respectively express the different qualities of all the red, all the yellow, and all the blue, that there is in the picture. Thus, then, we shall have obtained, as a whole, all the information that the given picture is able to afford, but not its reproduction at one direct glance. In other words, we have the analysis of the colour of the picture, but not the synthesis." To obtain this kind of analysis of the different coloured rays proceeding from the same picture, M. Cros makes them pass through stained glass. The synthesis consists in superposing the three positive prints one over the other on a white or transparent surface, so as to produce a constant result visible without the interposition of any optical instrument. For this purpose he has recourse to three heliographic plates on stone or steel taken from the three negatives, and from these he obtains positive prints. The dark parts of the red print, for example, represent the parts of the picture where the red has least acted, the light parts of the print those where it is most pronounced. This print, which is called the red print, is pulled in the complementary colour of red—that is, in green; similarly the yellow print is taken in violet, and the blue in orange. The second and third of these prints are taken on transparent plates, so as to allow the tints below them to be seen. "In practice," further writes M. Cros, "it will be probably better to take the negatives by means of the green, violet, and orange rays, and to pull the prints with red, yellow, and blue colours. It will also be well to begin with the print in blue, for transparent blue lakes are rare, but the yellow and red pigments can be more easily diluted. The final complete print, taken in this way, by a method resembling that of chromo lithography, preserves in its combined tints the same relations as those of the original picture, except that each of the colours will be, to a slight extent, lowered by a tinge of its respective com-

plementary, and this will produce a general effect, as if a bistre ground had been used. In those spaces where none of the colours have acted, the three prints will show the maxima of colourization, and superposed they will produce black; where the three colours have manifested the most intense action the three prints will allow the white of the paper to show through. Pursuing the analysis, it is easy to see how the secondary and tertiary tints will be produced."

Process of M. Ducos du Hauron.—The above is a summary account of M. Cros' method; let us now note that that of M. Ducos du Hauron rests on exactly the same chain of reasoning. Granted the principle that simple colours can be reduced to three, M. Ducos argues thus:—If I can decompose into three distinct pictures—a red one, a yellow one, and a blue one—the single picture which I am going to copy, but which is in reality a triple picture as far as regards the colour rendered by nature, and if of each of these three pictures I can obtain a photographic copy which reproduces its special colour, it will be enough for me to combine these three coloured images into one image to obtain an exact and faithful reproduction of the original as regards both colour, modelling, and general effect. Starting from this hypothesis, M. Ducos du Hauron, after many experiments, has succeeded in obtaining separately with the camera three negatives of the same subject, each taken by a differently coloured light—a green light, a violet light, and an orange light. These negatives he calls his monochromes; the green light gives the red monochrome, the violet light the yellow monochrome, and the orange light the blue monochrome. These are the complementary colours. "Let us take, for instance," says M. Ducos du Hauron, "the red monochrome produced by the negative taken with the green light. Since the cell filled with a green liquid acts a filter for light of that colour—that is, allows the green rays almost exclusively to pass, and intercepts the greater part of the other rays in proportion as their tone approaches more nearly that of the true red, and since, on the other hand, these natural objects, which emit abundantly the green rays, are coloured yellow, green, and blue, it follows that the negative in question will translate into black all yellow, green, and blue surfaces: also that the red pigment of the monochrome taken from this negative will translate into red the reds of the model, and that a red the more intense in proportion as the red of the model is more decided; lastly, that this red pigment will be eliminated beneath the black parts of the negative—that is to say, in the parts of the monochrome corresponding to yellow, green, and blue surfaces—and that this elimination will be the more complete in proportion as the yellow, the green, and the blue are more decided. Analogous reasoning applies to the other monochromes: each will contain its proper proportion of the special colour it is intended to represent, either in a simple or combined form." By superposing these three monochromes—the red, the yellow, and the blue, we obtain the synthesis—that is, the polychromatic image. Everywhere there will be formed a combination of red, and yellow, and blue in unequal proportions. The red, yellow, and blue rays transmitted or reflected by natural objects are all compound, although they produce a simple effect on the retina of the eye. There is always some other colour in our reds, our yellows, and our blues, and for this reason the mixture of our colouring substances are able to render the orange, the violet, and the green. In order to obtain as accurate a reproduction as possible of the natural colours, the three monochromes, or positive images to be transferred to a white ground, must be worked up with the purest pigments; the red should be the result of the entire absence of all green rays, the yellow that of all the violet rays, and the blue that of all the orange rays. For working, the processes employed are those of photographic printing in colours, with coloured gelatino-bichromate and other similar methods; prints may also be got by using

perchloride of iron instead of bichromate. We may also produce the three monochromes chemically by separately focussing on three plates with different salts of silver. Chromo-photography depends, therefore, really on the decomposition of light in the way indicated above, a way which is certainly complicated, and appears to admit of very little simplification. "This decomposition or filtering of the light may be either physical or chemical—physical when it is effected by the use of coloured media (coloured glasses, prisms &c.); chemically when we can produce it by means of photographic compounds which are sensitive only to the colours of certain parts of the spectrum to the exclusion of all others."

Theory and Practice of the Two Processes.—I have now explained the principles on which the two inventors have worked—principles which seem to me to be fully established, and to admit of no contradiction. As regards practice, there is room for infinite variety, and it is for the practitioners and specialists to look for the methods of obtaining the best results. M. Ducos du Hauron has on many occasions shown the results of his patient research and indefatigable study. M. Ch. Cros has not gone beyond publishing his theoretical notions; he wishes those who have a liking for the subject, and who possess the means, to enter on the field of practical experiment, of which he does not endeavour to conceal, but rather avows, the great and manifold difficulties. He recognizes, moreover, that it is not enough to merely superpose the three prints on which his system is based; this would be merely eluding the correct solution of the problem. Now to M. Ducos du Hauron belongs the indisputable merit of having carried the entire arrangement out of the region of theory into that of practice. So soon as the processes of photography are so far simplified that every one, without necessarily being a technical photographer, can work them, it is to be hoped that other savants will turn the discoveries of M. Ch. Cros and Ducos du Hauron to account. Gradually the photographic camera finds a place in the laboratories of our most celebrated scientific men, and it does not appear too much to expect that one fine day, and that very soon, the world would be startled by the news that the great secret of all has at last been discovered. Then photography will have found the link still wanting to render it a complete art, and some lucky experimenter will claim the prize left by the Duke de Luynes, as well as receive the meed of public acknowledgment.

K. VERSNAEYEN.

REPLY TO THE PAPERS READ AT LAST MEETING OF THE SOCIETY AT THE "DISCUSSION ON GELATINE EMULSIONS."

BY C. BENNETT.*

In the first paper read at the last meeting of this Society, the theory which was started, that the action of long emulsification was to reduce fog, appears quite feasible, provided the salts are so proportioned as to induce fog. This, however, I have never proposed; my aim has been in the opposite direction, and I am fully convinced that from the first hour of emulsification fog should not and cannot exist in a properly proportioned emulsion. The theory of the particles of silver bromide becoming finer by emulsification, and in consequence of the greater surface presented to the action of light more sensitive, is one that I would willingly grasp were it possible, but under no power of my own microscope have I been able to detect any difference in an emulsion during the earlier or later stages of emulsification. When an emulsion is lightly salted, I observe that the particles are infinitesimally fine, and remain so, however long the emulsification may be. When heavily salted, they are coarse and remain so—at least, such is my experience. We must all hope Captain Abney's continuous experiments may throw more light on these particulars, because these experiments

enable practical workers to arrive at their conclusions with greater ease; and although I cannot say my own experience exactly tallies, I feel sure these and similar experiments must ultimately end in the solution of the problem of long emulsification and increase of sensitiveness: points which, in connection both with gelatine and collodion, are of the highest importance. I cannot exactly comprehend that where the particles are in contact, as Captain Abney states, the reduction of the adjacent unexposed particles can possibly follow so rapidly upon the reduction of the exposed particles as this portion of the theory would seem to require. In reality, when the film is flooded with pyro, the fog is produced evenly and simultaneously over the whole surface, and does not, as might be supposed from Captain Abney's theory, spread from a high light on to a shadow. I speak of fog under the condition laid down by Captain Abney, namely, when the particles are coarse and in contact. I hope Captain Abney will soon be in a position to bring forward as a fact that which at present he treats as a theory.

With regard to Messrs. Bedford and Fry's remarks respecting the coloured light to be employed with gelatine plates, I believe both gentlemen alluded to development only, and not to the making of the plates. I can only say that with less than two thicknesses of ruby glass (except with artificial light) I should fail entirely to make the films; and respecting orange glass, I may certainly not have procured the right description, but I have never met with a sample which, even when three or four thicknesses were used, would enable me to coat or develop with safety. I do not, however, stint the light, provided it be of the right colour; the only colour I find in practice to be efficient is deep ruby, and of this I find I can use any quantity without fear, but prefer four square feet of four thickness, to one square foot of one thickness. I speak as a practical worker, and repeat that I presume Messrs. Bedford and Fry allude only to development when they recommend orange light. For that purpose it is quite possible, by adopting suitable means, to cut off the direct rays from falling upon the plates to utilize Mr. Fry's plan, but where extra rapid results, necessitating a powerful developer, are sought for, the orange paper or glass would assume a decidedly dangerous phase. I find that Captain Abney, in a letter to the *Journal*, states that orange glass, no matter of what density, must eventually produce fog, and gives his reason why this is so. I am glad to say that in practice I find my own results entirely corroborate this statement. Each operator must then decide what amount of actinic light he can afford to admit into his dark room, and place in the imaginary scales on the one hand "convenience of working," and on the other, "quality of result," and strike a balance, and as there will no doubt be many opinions as to what constitutes perfection of results, so we may expect to find many different views as to the description of light to be used with gelatine films. I have not yet had time to test Colonel Wortley's addition of nitrate of uranium to the emulsion, so will leave that portion of the question. Colonel Wortley has stated that he found his plates as rapid as mine, though they had not been emulsified for so long a period, and attributed that to the manner of washing. Colonel Wortley will remember that the plates I exposed against his were described at the time as having been prepared from an emulsion which had been rinsed out in only three changes of water, as my inlet and outlet pipes had been frozen a couple of months; the plates, therefore, can scarcely be taken as a fair test of long emulsification, and the action of Colonel Wortley in bringing them forward as examples is calculated to mislead.

Mr. H. B. Berkeley's paper "On Gelatine Emulsion, with Excess of Silver," confirms all I have previously said with regard to the cause of red fog, which, wherever it exists, destroys all sensitiveness. It has been shown, over and over again, that free silver is not necessary to the highest degree of sensitiveness; why, therefore, continue to use it in the face of such a long train of evils?

I entirely agree with Mr. Fry's remarks, that the effects

obtained upon properly prepared gelatine films are more uniform, and require less local treatment than is the case when collodion is employed; this, I think, corroborates my argument to Captain Abney, that local development, as in collodion and bath plates, is not necessary; and, as Mr. Fry states further on, "they do not require that separate parts shall be reinforced, the correct gradations being a striking characteristic of the system." I feel sure, at the time these words were spoken, Mr. Fry had no idea of ever supplying them commercially, and so only spoke as one who had used gelatine films in the studio; but it is a point I have always contended, that the more sensitive the film, the more equable is the action of light, and the more correct are the gradations. The negatives shown by Mr. Wainwright also were a telling proof that want of latitude in exposure is not one of the characteristics of the gelatine process.

I am sorry this subject has been so prolonged in its discussion, but cannot fail to notice that at the last meeting, although a second was evening devoted to the same subject, the interest appeared as keen at the last minute of the hour as at the first, which can only be attributed to the fact that the interest was on a vital point, namely, dry-plate or silver bath, not only for the field, but the studio.

COLLODION TRANSFERS.

BY W. T. MORGAN.*

At a recent meeting of this Society, as most of you are aware, a very interesting paper was read by Mr. Foxlee on the subject of enlargements. During the discussion that ensued, the question arose as to which is the best mode of making large pictures. I remarked that for all moderate sized enlargements (say 20 by 16) I preferred the collodion transfer as possessing many advantages over all other known methods of enlarging. Mr. Simpson then suggested that I should prepare a paper on the subject for this meeting; but, as I have nothing new to bring forth, but what every photographer knew, I could not see how I would profitably occupy the meeting. It was then proposed that I should explain my method of working. This I will do with much pleasure.

I maintain that collodion transfers possess many advantages over all other known methods of enlarging, not even excepting the secret five pound, ten, or fifteen pounders. In the first place, there is the facility by which they can be produced; secondly, great variety in the choice of material to which they can be transferred; and, thirdly, superiority of the finished picture. I will give an instance of the first-named. An officer in the army came to my place one morning, and asked me whether I could make him a large picture to match one he had of his wife, size 14 by 12. He was proceeding to India by the evening mail, and wished to make it a present before he left. It was to be painted, framed, &c., at latest by 7 p.m. the same day. This, of course, I told him was out of the question; the light was then too poor even to make a large negative, without the *et ceteras* attached, and the most I could attempt was to make him a few *cartes* by the time named. He sat for the *cartes*, and I got a tolerable negative. In the course of conversation, he mentioned that he would not care what he paid if he could get what he required. Now, as necessity is universally acknowledged to be the mother of invention, so in my case I began to lament that I could not transfer a little of the useful that appeared to be so plentiful with him and so scarce with me. It then occurred to me that it might be done by collodion transfer, so I set to work with a will. In half-an-hour the transfer was made, in less than half-an-hour more the artist was at work at it, and before 6 p.m. it was fairly painted in oils, framed, &c., and eight guineas paid for it, to our mutual satisfaction. I think this is a fair sample of the facility by which they can be produced.

* This paper was originally read before the South London Photographic Society, and we reproduce it here as the clear statement of a practical man, for the benefit of many who have asked us to reprint instructions for this method.

Then, on the score of variety, they can be used as transparencies, or, if for working in crayons, they can be placed on coarse drawing papers of any tint; if for water colours, on smooth papers. This can be transferred to ivory for miniatures, or to canvas for oils; but if for plain pictures, I think there is nothing more beautiful than transfers upon the eburneum, as practised by the late Mr. Burgess, of Norwich. In the next place, there is more rotundity, better texture, and more detail in the finished picture, and without that very objectionable thickening of the hair, spreading of the high lights, and general flatness, that always prevail in the enlarged negative by the ordinary process.

This is my system of working; but, as I before mentioned, there is nothing either new or novel, but simply plain, practical experience. Coat a plate with either Huggon's, Mawson's or any good collodion—if great softness is desired, newly iodized; if for vigour, a month or two old will be the best. Expose three or four times longer than would be required for iron development. Develop with the following:—

Pyrogallie...	...	...	100 grains
Citric acid	...	...	60 „
Glacial acid	...	...	2 ounces
Water	...	...	20 „

The development must be stopped immediately all the detail is well out, without there being too much vigour on looking through the picture as a transparency. Wash well, and fix with cyanide as for negatives; wash well again, and then pour over the surface the toning solution. Sometimes, when the negative is every way suitable, the light good, and all things favourable, the picture will develop with an agreeable tone, and will not, in that case, require further toning; but this is not always to be relied upon. One of the principal drawbacks to the more general adoption of collodion transfers is the very objectionable cold blue-black tone that usually pervades them. I have tried all kinds of toning—bichloride of mercury, uranium, sulphocyanide, and almost everything else that has ever been suggested—but for all practical purposes I have found this to be the most simple and effective:—

Neutral chloride of gold...	...	1 grain
Water	...	1 drachm

This will tone the picture almost immediately, and give a rich tone if the picture was well exposed and thin; but if the development was slow from the exposure being short, then the picture will gain in density, and will generally be of an unpleasant blue-black tone.

After toning, pour off the solution into a measure, and flush the plate with a little water to save all the gold possible, as it takes very little to tone the picture. Wash the plate thoroughly well, and proceed to transfer, or lay the plate in a dish of clean water till a more convenient time; it will take no harm for a few days if kept immersed. To prepare the paper, take toned drawing-paper, or any other kind you may fancy, and float for about one minute on the following whilst warm:—

Gelatine	...	...	2 ounces
Water	...	...	2 pints
Chrome alum	...	...	60 grains

Then hang up to dry in a warm place. When the paper is once dry the film of gelatine will not again dissolve off, owing to the chrome alum making it insoluble; it will, however, after soaking a few minutes in tepid water, until it becomes slightly tacky.

To transfer the delicate collodion film from a large plate to rough paper must appear to the uninitiated a most formidable and delicate manipulation; but it appears much more difficult on paper than it really is in practice. The following will be found a very simple plan:—Soak a suitable piece of the above-mentioned paper in tepid water for a few minutes. Whilst this is soaking pour over the plate a solution of ten drops of nitric acid to one ounce of water, and flow backwards and forwards for a few seconds; this ensures the film leaving the plate more readily. Then apply your transfer paper, carefully avoiding air-bubbles, &c.; rub

it down into perfect contact with a squeegee. Care must be taken that the paper does not move after being once in contact with the film, as this would entirely spoil the picture. I always turn the paper over the edge towards the left, and holding with thumb and finger draw the squeegee across from left to right, then lay aside in a warm place until the paper is surface dry (that is, dry to the touch); lift one corner, and, if sufficiently dry, the film and paper will leave the glass and peel off quite easily. This will produce a matt surface, but when a highly-polished surface is desired the plate should be rubbed (before coating) with a little wax dissolved in ether, and the paper and film allowed to dry thoroughly; then pass a penknife round the picture, and it will immediately leave the plate with a very bright surface. Mount them as soon after leaving the glass as possible, as they soon curl up and become as tenacious as a watch-spring, and very difficult to mount at all, owing to the collodion surface not expanding after being once dry. With a slight wash over of a weak solution of gelatine they take water or any other colours quite easily, and, if desired, they can be “Vander-Weyded.” There appears to be a great difficulty in obtaining enlargements on canvas. I have found the collodion transfers answer the purpose most admirably by preparing the canvas with the gelatine and chrome alum as before mentioned.

Now, I have another way of making transfers, and this, undoubtedly, is the best; but, like most other good things, it is rather difficult to get at. Coat the plate with Thomas's or Mawson's collodion. I prefer it after being six months iodized, and rather thick. I prefer the silver bath fifty grains to the ounce, but any good working bath will do. Let the plate remain rather longer in the bath than usual; remove the plate, and wash off all free nitrate under an ordinary tap; and, finally, wash with a little distilled water. Then, for the preservative, take—

Tannin	...	...	6 drachms
Honey	...	...	4 „
Water	...	...	20 ounces

Mix with hot water, and filter. Take a little of this in a clean measure or cup and flood the plate, pouring it off and on three or four times; then place the plate in a dark, warm place to dry, and store away for use. I have found these plates keep well for a month, and I dare say others will keep longer. When you require the plates for use proceed in the same way as for wet plates, but giving about six times the exposure; or, perhaps, the best way is to try a small plate first, and see as to exposure; or, better still, as a guide, is when a slight trace of damage is just visible on the plate before developing. Moisten the plate well with distilled water, and develop with the following:—

Pyrogallie acid	...	...	40 grains
Citric acid...	...	...	20 „
Tartaric acid	...	...	20 „
Water	...	...	20 „

Flood the plate with this, and pour back into the measure, then add one or two drops of a thirty-grain solution of silver. If the picture comes up without density and full of detail, add a little more silver; if strong and without detail, add more developer. Develop rather deep, as the toning reduces the picture a little; then tone and fix with the following:—

Sulphocyanide of ammonia	...	5 ounces
Chloride of gold	...	5 grains
Water	...	20 ounces

Flood the plate with this, and pour on and off until all yellowness disappears, then thoroughly wash, and transfer in the usual manner.

The small crystals before you were done in this manner. I have made many better as regards tone, &c. I much regret I have not been able to make an enlargement by this method in time to show you this evening, but I can safely say that when it is carefully worked with tact and judgment, as it should be, the tone and general beauty of the untouched enlargement leave little to be desired.

The Photographic News.

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COLLODION TRANSFERS—ENLARGED AND OTHERWISE.

It is a fact, in the history of photography, not a little odd, that many very excellent processes have been invented and published, which have either excited little attention and been quickly forgotten, or, having gained some attention, fail to make way with the majority, and soon fall into disuse. Many such processes might be named, amongst which we might classify the cyanotype process and its modifications, the ink process, in which a permanent image of gallate of iron is produced, the lac printing process, and many others.

Amongst these processes, producing excellent results, which have received less attention than they deserve, there is none more valuable than the collodion transfer process. The picture is exceedingly delicate and pleasing, presumably permanent, easily and rapidly produced, and generally gives satisfaction to the public. With existing facilities for rapid working, it is scarcely too much to say that on the dullest day in November a sitter might enter the studio, and within an hour receive a dozen completed eard portraits! This, of course, would be effected by the aid of gas or artificial light and collodion printing. The process originated by Dr. Moitessier received at first but little attention. Ultimately it was taken up by M. Disderi, and acquired considerable vogue for a time. After his collapse the process seemed to fall into disuse, and has remained so.

Its claims are various. As we have said, it is rapid, simple, and beautiful. A collodion film is, of course, much more delicate than paper. Every photographer has noticed with regret that his best paper prints fail to render all the delicate gradations to be found in the negative. The collodion print will give every gradation and detail the negative possesses. The print may be of the same size, or it may be larger or smaller, to suit any purpose. The process yields admirable enlargements, more rapidly than they can be produced by any other method. The printing can be effected by gas light, or even by lamp light. From the fact that we have repeatedly recently been solicited to re-publish instructions for working the process, we are led to conclude a want of knowledge of the process and its capacities is the chief cause why it is so little practised; we are induced, therefore, to give in the present number tolerably copious instructions for working this method, and applying it to various purposes, selecting the details from previously published articles by ourselves and others. We will subjoin here a summary of the working details and conditions required.

The Negative most suitable for this purpose is delicate, fully exposed, well defined, not intensified, and free from defects. A negative possessing sufficient vigour for printing

on albumenized paper is not suitable for this purpose. The kind of negative used for solar camera enlargements answers well. It is better unvarnished.

The Collodion should possess good body, and yield a tough film; a powdery collodion increases the difficulty of working. The proportion of soluble cotton will depend somewhat on circumstances; but, as a rule, not less than 6 grains per ounce should be used. Equal parts of ether and alcohol will answer for the solvents. Most good samples of bromo-iodised collodion will answer the purpose.

The Glass should be clean and free from scratches or defects. To facilitate the final transfer, its surface should be treated with a saturated solution of beeswax in ether, and then rubbed with a linen cloth.

The Nitrate Bath should be in good order for ordinary work, and be free from any disposition to fog. As a general rule, a new bath, or one which has been treated with cyanide of potassium, will give good results.

A Camera or Copying-box expressly for the purpose must be used. It will consist of a long box with a groove for the negative at one end, and a groove for the ground glass and dark shade at the other end. Midway is a sliding partition on which the lens is fixed. The box must be at least four times as long as the equivalent focus of the lens. If, for instance, the lens have an equivalent focus of 8 inches, the box must be 32 inches long. In operating, the negative should be placed so as to receive uninterrupted light from the sky, or a piece of white paper may be placed in such position as to reflect the light of the sky upon the negative. A stop, sufficiently small to give perfect definition all over, should be used in the lens.

The Developer may consist either of protosulphate of iron or pyrogalllic acid. The tone of the print somewhat depends on the developer, and especially by the acid employed. The use of acetic acid tends to a brown tone; the use of citric acid to a blue-black tone; the use of tartaric acid also to a blue-black tone. The organico-iron developer possesses especial advantages in giving great brilliancy and aiding in the production of a black tone. Either of the following developers will give good results:—

Protosulphate of iron	...	...	5 grains
Citric acid	...	...	7 "
Glacial acetic acid	...	...	10 minims
Water	...	...	1 ounce
Pyrogalllic acid	...	...	3 to 6 grains
Citric acid	...	...	3 "
Glacial acetic acid	...	...	20 minims
Water	...	...	1 ounce

For blue-black tones, a portion of the acetic acid may be replaced with tartaric acid.

The Exposure is an important element in securing good results. A full exposure and short development is best; if protracted development is required to bring out half-tone, the image is apt to be buried, and the picture looks dull, and lacks detail in the shadows. At the same time, it should be remembered that over-exposure and under-development tend to the production of an image lacking force and contrast. A little experience is the best guide.

The Tone of the Picture depends somewhat on the development; but after fixing (which may be effected with cyanide or hyposulphite of soda) and thorough washing, the picture may be toned with a neutral solution of chloride of gold, 1 grain to 3 ounces of water. The toning should be continued until the desired colour is seen at the opposite side of the film through the glass. Modified tones may be obtained by the known method of applying a 10-grain solution of bichloride of mercury, followed by a weak solution of sulphide of ammonium; but the film becomes tender after this operation, and renders the subsequent operation of transferring more troublesome. The time required for gold toning is very variable, according to the conditions of the print; it is much longer when the proof has taken a long time to develop, and is formed of intense blacks. It is seldom, however, that the complete action of

the gold bath requires more than three or four minutes; it often requires even less time. It is sometimes necessary to renew the toning solution once or twice; this happens especially when the picture possesses very opaque portions. The proof is finally washed in abundance of water, and it then only remains to transfer it to paper.

The Transferring is the most delicate operation, and requires the greatest manipular skill. The following is the method recommended by Dr. Moitessier:—After the last washing the plate is placed on a stand in a perfectly horizontal position; then pour over it as much distilled water as will remain, then apply to the film a piece of ordinary albumenized paper previously moistened, taking care that no bubbles of air are retained between the paper and the collodion; now raise up the plate, holding the paper by the two corners to prevent its sliding, and the whole is kept in a vertical position for a few moments, to allow the water to drain off. The plate is then left to itself until the paper is completely dry; it may be put in the sunshine, or brought near a fire to hasten the drying. Finally, the plate is immersed in a basin full of water, and, at the expiration of ten to fifteen minutes, the piece of paper detaches itself almost spontaneously, bringing with it the collodion film, which adheres to the paper in the most perfect manner. When dry the proof is extremely brilliant, and the most delicate details appear, with all the sharpness they possess in the negative.

In place of the albumenized paper here mentioned, an enamel paper, with a gelatinous surface, is especially prepared in France for this purpose, and is preferable to any other.

It sometimes happens that, from the under-exposure, the use of a too dense negative, or from the quality of the collodion, the transferred image looks less brilliant than it did on the glass before drying. To remedy this defect proceed as follows:—After toning and washing the finished collodion transparency, allow it to dry, and then varnish with a spirit varnish. When this is dry apply a thin solution of gelatine, containing a trace of glycerine or a little sugar. When dry apply a piece of the enamelled paper or plain paper, first dipped in water, as before described, taking care to avoid air-bubbles; when dry remove from the glass by inserting a penknife under the film. If the glass were properly treated with wax the picture will leave without difficulty.

In another column will be found an article on the production of card and other portraits.

PHOTOGRAPHY AND FORTUNE-TELLING.

A CURIOUS case, in which photography is charged as auxiliary to a system of false pretences and so-called fortune telling, was heard at Southwark Police Court a few days ago, a photograph of the "future husband" of applicants being sent for a number of penny stamps! The case is reported in our daily contemporary as follows:—

"Thomas Frederick Henry, described as a photographer at 42, Cooper's Road, Old Kent Road, was charged with pretending to be able to tell fortunes. Mr. Washington appeared for the prisoner. Sarah Weeks, middle-aged, said she was a widow, and resided at 1, Sandford Lane, Stoke Newington. At the end of last month she saw the following advertisement:—'Important.—Any unmarried persons sending their description, including date of birth and eighteen stamps, will receive in return a beautiful and artistic likeness of their future husband or wife, date of marriage, &c. Also my wonderful secret or fascimeter, carefully sealed. Address, T. Henry, 42, Cooper's Road, Old Kent Road, Camberwell.' On reading that advertisement she wrote a letter to the address, describing herself accurately, and enclosing eighteen stamps. A few days afterwards she received a packet from T. Henry, enclosing the photograph of a middle-aged good-looking gentle-

man, and setting forth that it was a likeness of her future husband, and that they would be married in less than nineteen weeks. There were also a number of papers relative to marriage, and some absurd and stupid paragraphs. Knowing Detective-Sergeant Wells, she communicated with him, and the present proceedings were taken. In cross-examination by Mr. Washington she said that she would not be disinclined to marry the original of the photograph if she liked him, and he was disengaged; but she was in no hurry. Sergeant Wells first called her attention to the advertisement, and asked her to write to the address, and he handed her the stamps required. She, however, wrote the letter and posted it herself. She described herself as a widow willing to get married. She had not been dissatisfied with the photograph, and had not written for the return of the stamps. John Wells, a detective sergeant of the M division, said that in consequence of numerous complaints reaching the Commissioners of Police relative to the advertisement, by direction of Chief-Inspector Fox, M division, he was instructed to make enquiries, and communicated with the last witness, who handed him the photograph and the papers received from the prisoner, whom he apprehended that morning on a warrant. On reading the letter to him, he said, "Oh, that's not much. It's under the Vagrancy Act." On searching his house he found a large number of photographs of ladies and gentlemen, papers, and letters (produced) similar to those sent to Mrs. Weeks. Inspector Fox here asked for a remand, inasmuch as he should be able to produce important evidence against the prisoner on a future day. Mr. Washington objected to a remand, as there was no evidence of fraud or deceit proved. The prisoner had sent a photograph which Mrs. Weeks approved. Mr. Slade said that if he (Mr. Washington) could bring the original of the photograph to marry Mrs. Weeks, that might alter his opinion. He remanded the prisoner for a week, and agreed to accept bail for his attendance."

ON A MODIFIED METHOD OF PREPARING GELATINO-BROMIDE EMULSIONS.

BY CAPTAIN ABNEY, R.E., F.R.S.

DURING a conversation with Lieut. Darwin, R.E., the Honorary Secretary of the Photographic Society, our thoughts turned to the gelatine plates with which at present most photographers are crazed. His remarks put me in mind of some old experiments I had made with collodion and gelatine emulsions before the advent of Mr. Bennett's process, and I determined to repeat them. The results I now communicate to your columns, as I believe they will aid the progress of gelatine emulsion making, by shortening the process of preparation. The method pursued, though not new in theory, is, I believe, new from a published and from a practical point of view; and it is certainly to be commended for its simplicity.

One of the great objects, I take it, in the preparation of a sensitive emulsion is to obtain it perfectly washed, that is, free from excess of soluble bromide, or free from soluble silver nitrate. In the latter case there is a general consensus of opinion that the elimination is incomplete when treated in the ordinary manner, since a portion combines with the gelatine, with a resulting production of red fog, &c. The most direct method of preparing silver bromide is by means of aqueous solutions of soluble bromide and silver nitrate, when the precipitate falls in dense masses of a curly nature. Why not use the direct method, since such a precipitate can be easily and rapidly washed? The general answer would be that the coarseness of the precipitate would interfere with the result. My answer is, however, try it, and see if it does. Let us suppose we want to prepare about 10 ounces of an emulsion with excess of silver, and that Bennett's formula is to be used. Weigh out 70 grains of (say) ammonium bromide, and dis-

solve it in 10 ounces of water, and add to it 1 drachm of nitric acid. To fully convert the 70 grains of bromide, we should require about 117 grains of silver nitrate, so weigh out 130 grains, and dissolve it in another 10 ounces of water. Pour the former into the latter gradually; whilst so doing stir well, and then allow the precipitate to settle. Pour off the supernatant fluid, fill up the vessel (a glass one by preference) containing the solution, stir well, and again pour off. Repeat this half-a-dozen times, or so long as blue litmus paper reddens in the decanted water. When the paper remains unchanged, drain off as close as possible, and wait for the next operation.

Whilst this washing takes place, the 200 grains of gelatine can be put into a bottle containing 9 ounces of water, and, when swollen, a gentle heat is applied till it is dissolved. The precipitated bromide is next spooned out into the gelatine solution, all particles being rinsed out with the warm solution. The bottle is next shaken up vigorously, and the would-be emulsion will look perfectly hopeless, coarse particles of the silver compound being distributed throughout the liquid. Place the bottle for a quarter of an hour in a pan of water heated up to 90°, and shake again, and pour out a drop on a glass plate. It will be found that a perfect emulsion is formed, smooth, and not very creamy. Coat a plate with this for trial, and keep the emulsion stewing as in Bennett's process. At the end of a day coat another plate, and stew again for another day; coat another plate, and so on as long as may be desired. It will be found that each day's stewing improves the sensitiveness, and that the colour of the emulsion dropped on a plate, when examined by transmitted light, changes from a dirty yellow colour, when first prepared, to a grey violet colour after several days' emulsification. Expose the trial plates, and note their increasing rapidity as the cooking is prolonged. One day's cooking or stewing will give one a decently rapid plate—as rapid, indeed, as a wet plate—and plenty of density. Are there any advantages with this method of preparation besides that of saving the washing? I think there are, as far as my limited experience with it goes.

I have not met with any of those plague spots (black or otherwise) of which Mr. Wainwright has so feelingly written. If this should prove to be the case, the cause of spots may be traced to the contact of silver nitrate with the gelatine, and the combination of the former with some impurity in the latter. At any rate, I have not met with any spots of any kind as yet, and I believe that the right point to aim at is to prevent the silver being *at all* in contact with the gelatine. It also appears to me that the physical quality of the gelatine is better by such prevention. Any sample of gelatine may probably be used, though, as to this, I cannot speak definitely.

The advantages of the method are, that an emulsion free from all soluble salts can be prepared in a couple of hours, since by increasing the temperature to 150° for a short time a creamy and sensitive state is produced.

REMOVING SALTS FROM EMULSION BY DIALYSIS.

A correspondent at Grenada, Mr. J. F. Gresham, makes the following suggestion:—

“Will you allow me to make a suggestion that may be



useful, at any rate, to the amateur portion of your subscribers.

Those who separate the water and soluble salts from their emulsion by dialysis would find a hurricane lamp chimney (globe or cylinder, or whatever it is called) very convenient. The rim round the top forms an excellent means of attaching the parchment paper, then by turning the glass upside down the emulsion can be poured in, and the operation proceeded with.—Yours very truly, J. F. GRESHAM.”

A NOTE ON THE PREPARATION OF SMALL QUANTITIES OF BROMO-GELATINE EMULSION.

BY T. SEBASTIAN DAVIS, F.C.S.*

In addition to the general application of photography to the wholesale production of pictures possessing commercial value, a special interest and greater variety is sometimes associated with the limited number obtained by enterprising amateurs. Means, therefore, to obtain such with facility, without the elaborate fittings desirable when a continuous supply of one particular kind is requisite, must at all times be desirable. Under this impression I venture to introduce to the notice of the Society an arrangement by which four or six ounces of a bromo-gelatine emulsion may be made and washed with great ease. Instead of using a ruby glass vessel, as usually adopted, I recommend for the preparation of the emulsion a well glazed rectangular or flattened bottle, made of stoneware. The solution of the gelatine and salts is effected when the bottle is standing upright; but when the whole is sufficiently digested, the emulsion is spread out into a thin layer by simply transferring the vessel to a horizontal position. When the gelatine is set, the plain stopper of the bottle is replaced by a cork carrying two tubes, one sufficiently long to reach to the bottom of the bottle for the inlet of water, and the other simply passing through its depth for egress. The outer portion of each tube may be advantageously bent into a spiral form so as to prevent access of light to the emulsion. A funnel being fastened to the extremity of the inlet, as long as water is allowed to flow into the same a current will pass over the preparation, and carry with it the soluble salts. When sufficiently washed the water can be drained off, and the emulsion, being redissolved by heat, will be ready to be filtered previous to its application to the plate.

In some preliminary experiments that I have made with the above I am led to the conclusion that no advantage is gained by first dissolving the bromide and silver salts before their addition to the emulsion. The bromide salt may, with less chance of loss, be directly added to the gelatine solution, and shortly afterwards powdered silver-nitrate in like manner. I may remark, in passing, as I deem my method to be now unusual, that in the analogous preparation of a collodio-bromide emulsion the direct addition of argentic-nitrate may be made, avoiding the necessity of the use of a hydrated alcohol, saving both trouble and loss, and giving an emulsion gradually formed with the silver-bromide in a fine state of division. The preparation of the gelato-bromide emulsion with the aid of the described apparatus can, it will be noticed, be made and washed, with the exception of the momentary interval of changing the corks, in ordinary light, and at a minimum cost of trouble.

THE PHOTOGRAPHY OF VISION.

BY W. S. BIRD.*

The daily and weekly journals occasionally indulge in quasi-scientific romances, and are prone to let imagination loose over photographic marvels. The latest tale of wonder has been concocted on very slender data in connection with recent researches on the physical structure of the retina, and with the endeavours to fix on that sensitive membrane the images that impinge upon it. The tale goes circumstan-

* Read before the Photographic Society of Great Britain.

tially to prove that upon the retina of a murdered person has been distinctly traced the photograph of the murderer and the theatre of the crime. Justice has been depicted armed with a new power for the detection of the criminal, and the old adage that "murder will out" has received a marvellous exemplification in the mechanism of the eye itself.

Belief in a story of this kind would not be difficult for many people, and even a photographer, knowing how parallel are the optical arrangements of the eye with the appliances of his art, would not be unduly credulous to give the matter some consideration. The eye and the ocular orbit, indeed, form a veritable camera-obscura, the dark lining of which necessary to absorb scattered rays of light is represented by the pigmented layers of the choroid membrane. The aqueous and vitreous humours answer to the lens, and serve the same optical purpose of collecting the rays of light to a focus, and throwing the image of external objects on the retina, which represents a concave sensitive plate. The iris, with its power of contraction and expansion, answers to the diaphragm, and the ciliary muscles, which change the curvature of the anterior surface of the crystalline lens to suit varying distances of the object from the eye, has its analogue in the adjusting screw. The parallel might be carried still further with considerations of optical aberrations in both the vital and the mechanical lenses, and the corresponding corrections by which in both cases the differences are compensated or modified.

Enough has, however, been said to show that it is not exceedingly strange if a ready credence has been given to accounts of images impressed on the living retina with uncommon vividness, being found there shortly after a violent death, and becoming a damning witness by the dead victim against the murderer. Fixing the photographic image thrown on a Daguerreotype plate was an almost miraculous fact at first, and that nature should be found more wonderful than art is an ordinary experience.

The intention of this paper is to indicate the small substratum of fact upon which imagination evolved its new romance, and to show the continued parallelism between the photographic and visual records of luminous impressions. The most recent researches of physiologists on the function of the retina bring the subject fairly in the limits of photographic interest. For the facts I shall bring before you I am largely indebted to an article in the *Revue de Deux Mondes* for March, entitled "Les Colorations de la Rétine et les Photographies dans l'Intérieur de l'Œil."

In the mechanism of vision the retina is the membrane that receives the image of objects, and conveys luminous impressions to the brain. A nervous current is believed to be set up by the impingement of the light, and we see; but by what transition a motion of nerve matter becomes a mental consciousness is a transcendent wonder, as much beyond the physiologist or the philosopher as it is outside our inquiry. But if in vital phenomena there is between means and the end a gulf impassable to our intelligence, yet all inquiry into the material basis of life leads to the conviction that vital manifestations are cognate with states and conditions of the organism, and researches into these conditions can never be a useless quest, although an ultimate mystery is involved that exceeds our power to solve.

The retina is a thin glossy membrane, the segment of a sphere, concave in front, and situated immediately behind the vitreous lens. Its texture is delicate, and its surface presents a small yellow spot, of which the centre corresponds with the anterior posterior axis of the ocular globe. This spot is believed to be the most sensitive portion of the membrane, and among mammals is found only in man and in the monkey.

Of old, anatomists saw in the retina only a membrane of two layers or coats, but in our days the microscope has largely augmented knowledge, and now some seven distinct layers are found, in one of which the presence of numerous minute cones and rods has been established, beyond doubt, by the concurrent testimony of independent observers. The

cones are mostly found in the yellow spot, the rods being more plentifully distributed throughout this coat of the membrane. These rods and cones, composed principally of extensions of the optic nerve, whose terminations form the anterior surface of the retina, have been likened to the papillæ of the skin in which the tactile nerves terminate. The cones are supposed to receive qualitative or colour impressions of light, while the rods take measure of intensity. Be this as it may, both cones and rods appear to play an important part in giving definite body to the image received by the retina. That is to say, the consciousness of seeing is not acquired merely by the image of an object falling on the retina, but the momentary fixation of that image takes place by physical changes in these rods and cones. It is this apparent fixing of the image which carries beyond previous experience the analogy of the globe of the eye and the camera.

The retina rests, as we know, immediately on the choroid membrane, which is full of pigment cells, the colour in which determines the hue of the external eye; but the substance of the retina, with the exception of the small yellow spot already mentioned, has, until recently, been considered colourless. The researches, however, of Professor Boll, of Rome, has led him to conclude that the true colour of the retina is purple-red, but that this colour is discharged by light. This visual purple can only be discerned in obscurity, or under such artificial illumination as will not discharge it. The colour does not disappear immediately with life, Professor Boll having preserved extirpated eyes for twenty-four hours, when the colour was still visible, and only disappeared on access of light. The cause of the retina having been hitherto found colourless is not, therefore, death, but it is simply the consequence of exposure to light. The retina of rabbits and frogs which had been killed in the dark showed a bright purple-red colour, but if killed in sunlight the retina were found colourless.

The existence of visual purple being thus placed beyond doubt, the quest began to discover its nature. Could it be a veritable pigment, or was it only a condition of physical variation in the structure of the organ? Freezing the retina did not destroy the colour, and while immersion in alcohol, ether, or chloroform, did destroy it, yet these liquids did not receive colouration. The existence of a pigment was doubted, but Kühne (a name well known among microscopic anatomists) succeeded in obtaining a solution of visual purple from which light expunged the colour. Kühne employed as solvent fresh bullock's bile, purified and freed from its own colour. He further collected the purple in powder, and found that while dry it resisted light, but if damp the light discoloured it. Putrefaction in its early stage did not destroy the colour. Solutions of the pigment were discoloured by solar light in a few seconds, by gaslight in half-an-hour. The extreme lines of the spectrum acted feebly, both red and violet; the blue and yellow were more active. The sum of Kühne's conclusions may be stated thus:—All visible light decomposed the retinal purple, but in variable times, the conditions of exposure being similar. Whatever the source of light employed, the visual purple, in losing its colour, passed first to yellow, then became white. The flame of sodium was found to be least active on the pigment, and experiments were conducted by this illumination.

In life, the colour of the retina renews itself continually; the source of the colour believed to be in pigmentary cells of the cones and rods mentioned as part of the structural apparatus of this membrane. The importance of this discovery of Boll and Kühne lies in the fact that here is seen for the first time palpable material modifications corresponding with impressions conveyed to the sensorium. This is a step forward in the mechanism of a conscious impression. The anatomy of the organs of sense has received the earnest attention of many eminent men, and the structures have been elaborately described without much insight into the functional method. Take the ear for an example: we are ignorant by what means a wave of sound impinging on the tympanum excites the nervous movement which results in

hearing. The impression must, judging by all analogy, be conveyed by some material means. If Boll be correct in his theory, he has in the case of vision gone a step further in discovery of the means, and the results may stimulate research on other organs. The theory is that the optical image thrown on the retina is momentarily fixed or apprehended by the actual formation of the pigmented picture in which purple corresponds to the shadows, white to the high lights, and insensible gradations between these extremes to the half-tones. This granted, we obtain wonderful insight into further correspondence between structural and conscious phenomena, and Boll goes so far as to say that the action of different agents, light and colour, waves of sound, palatable substances, odours, temperature, &c., produce in the terminal organs of sensation certain physical changes commensurate with the feelings produced. Such a statement touches in a revolutionary manner some old philosophies, but is in accord with similar tendencies of thought in various fields of research; still, it may be doubted if there be yet such firm foundation of fact as will support so bold an induction.

(To be continued.)

Proceedings of Societies.

THE PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.*

The ordinary meeting was held at 5A, Pall Mall East, on Tuesday, May 13th, Mr. JAMES GLAISHER, F.R.S., in the chair.

The minutes of the last meeting having been read and confirmed,

The following gentlemen were unanimously elected members of the Society:—W. B. Bolton, 2, York Street, Covent Garden, W.C.; Captain R. Phelps, R.A., 58, Ennismore Gardens, Princes Gate, S.W.; A. Bisset Thom, 49, Torrington Square, W.C.; James John Walker, 133, Adelaide Road, N.W.; W. Willis, jun., 49, Palace Grove, Bromley, Kent.

A paper by Mr. Bennett was read by Lieut. Darwin "In Reply to the Papers Read at Last Meeting of the Society at the 'Discussion on Gelatine Emulsions' (page 255).

The reading of the paper having concluded,

The President remarked that from the length of the discussion which had already taken place on this subject, he might be expected now to close it. He would not do that, however, in case any gentleman had any remarks to make. They need not, of course, be very extensive.

Mr. Fry asked permission to add one or two words to what he had already said on this subject. Mr. Bennett, in his paper had noted that he (Mr. Fry) spoke with some confidence as to orange paper or glass being permissible in the dark room window. He might say, in regard to his remarks, that it was very dull weather at the time he made the experiments. Orange paper, with several thicknesses, did seem sufficient for the purpose, and give every security one could desire; but he found that as the actinic power was increased, he had to use ruby glass. On adopting ruby glass he found the protection complete, without any serious loss of light in the developing room. It was owing to the dull weather that he had found the results as he previously stated.

Mr. W. BEDFORD thought Mr. Bennett must have misunderstood what he had previously stated, as he merely put forward experiments he had made for what they were worth. He then compared three thicknesses of orange glass with one of ruby, and he found the orange was as good or better than the ruby. He could not withdraw, as Mr. Fry had done, what he had said—

Mr. Fry; I do not withdraw; I rather modify.

Mr. BEDFORD continuing, remarked that in practice it was inconvenient to employ many thicknesses of orange glass. If it was necessary to have two thicknesses of ruby, it would be equally necessary to have four or five thicknesses of orange glass. To his mind it was possible to manufacture glass which would be better for the eye than ruby, and equally efficacious. Mr. Bedford showed the result of an experiment which he had made since the last meeting, and remarked that it was suggested that he should try one thickness of ruby and one of stained red, against

three of orange. He had done so with the result that there was not much to choose between them. The great desideratum, it appeared to him, was to get glass of the proper colour and of one thickness.

The President read a letter from Mr. Nelson, in which that gentleman stated that a bronchial attack prevented his attendance to take part in the discussion upon gelatine.

Captain ABNEY stated that Mr. Bennett had rather misunderstood what he had said regarding fog on plates, and he could not well explain without a black board. Mr. Bennett stated that he preferred four square feet of ruby glass of four thicknesses, rather than one square foot of one thickness. In the latter case there would be at least sixty-four times more actinic light penetrating through the one thickness of ruby glass than if four thicknesses were used, as the penetration progressed in geometrical rather than arithmetical ratio. Four thicknesses should therefore be practically impervious to actinic light. The ruby glass he (Captain Abney) was going to refer to was made for him by a firm in Birmingham, and it was manufactured remarkably thin. He had the materials used for flashing made into sheets of the thickness of microscopic glass for a special purpose, and failed to distinguish the slightest trace of blue. Flashing, he thought, had something to do with the transmission of the blue. Mr. Bedford had referred to orange and ruby, and stained red. He (Captain Abney) would like to see Mr. Bedford's ruby glass, because there was ruby and ruby. [Glasses were here handed in and examined by the spectroscopist.] Captain Abney remarked that there was a tinge of yellow going through the combination of stained red and ruby, and there was, as might be expected, of course, through the orange a large flood of green light.

Mr. BEDFORD; How do you account for the result?

Captain ABNEY did not know how it was, but it must be remembered that ordinary bromide emulsion was only sensitive as far as line B; there it stopped, because between B and C there was very little actinism whatever. There was another point, viz., with regard to local treatment of negatives, in which he did not agree with Mr. Bennett. In view of the importance of the correct arranging of light and shade, the gelatine process could never come into general use among artistic photographers if it was incapable of local treatment. He was only an amateur artist, but in the matter of light should not trust to any process which did not offer this facility. In a studio where the photographer had the control of curtains, no doubt gelatine plates ought to be perfect, because the portrait photographer had no business to work upon his negative during development: the effect ought to be produced in the original lighting. But when they came to landscapes, where it was not always possible for the photographer to choose his light, local treatment was highly desirable, and no process was perfect unless it was capable of such. Gelatine was rapid and good, but there was still the desideratum of being able to treat it locally, otherwise it would not come into general use amongst landscape photographers.

Mr. T. S. DAVIS then read "A Note on the Preparation of Small Quantities of Bromo-gelatin Emulsion" (see page 260).

Colonel WORTLEY remarked that, since the last meeting, he had made experiments in reference to one of the points mentioned by Mr. Cobb, of Woolwich, viz., the negatives changing colour in the light after intensifying. His (Colonel Wortley's) plates were exceedingly hard; in fact, he desiccated them thoroughly. He had exposed one of the plates to the sunlight ever since the last meeting, and there had been no change in it whatever. Whenever there had been any sun the plate had been subject to its influences, but there had been absolutely no change. Certain plates had been sent to him which he found had not been perfectly desiccated, underwent the same ordeal with the result that they were much stained. They were all stained in a peculiar manner, no matter how thoroughly they were washed, after they had been in the light. That being the case, he purposely took a plate which had not been thoroughly dried—half of it being more or less desiccated, and the other portion only surface dried; and having developed it in the same way as the others, the result was that there appeared a red stain conspicuously in the portion which was not dried, and he even found a large crystal embedded in the film itself, which resisted all possible washing, so firm a hold of it had the gelatine got. There was another point to which he would direct attention. Several persons had complained of the appearance of red stains on their negatives, a peculiar circumstance which was described in the *British Journal* as red and

* Condensed from the Official Report.

green, with which he was familiar under certain circumstances. Three weeks ago he prepared emulsion with the greatest possible care, there being ten plates wherewith to carry out the experiment. In the result he found that nine of the plates developed perfectly, and gave as good negatives as one could wish to see, but the tenth came out with the yellow and green stains in all their hideousness. He had always considered it a great mistake to omit the bromide in the developer, and the plate he referred to was the only one in which bromide was not used. If bromide and pyro were washed over the negative before adding ammonia it was nearly impossible to produce the stains. To show the necessity of thoroughly washing before fixing as well as after, he exhibited to the meeting a sample of the hyposulphite bath in which only some half dozen plates had been immersed. [*The liquid shown was of a deep red.*] He impressed strongly upon all who made gelatine plates the necessity of thoroughly desiccating the plates. It was, he believed, the solution of all the evils which people complained of. His own plates were almost like glass; and it would be almost as difficult to scratch them as glass.

Mr. S. DAVIS: Will Colonel Wortley describe his method for drying?

Colonel WORTLEY: It is what I first recommended—the use of alcohol.

Captain ABNEY added, that he found in fixing plates that a certain amount of sulphuretted hydrogen was given off, but what the cause of it was he was not prepared to say.

The PRESIDENT, in closing the discussion, said they were all exceedingly indebted to the several experimenters who had so kindly given the members the result of their labour. He might say if the desiccation of the plates was so important as Colonel Wortley stated, that gentleman might, at some future time, tell them how to obtain such complete desiccation.

Votes of thanks was then accorded to the various speakers.

The PRESIDENT then read the following letter from Mr. Dallmeyer:

"19, Bloomsbury Street, London, May 13th.

"DEAR SIR,—I regret my inability to be present at the Society's meeting this evening. I therefore send you what I intended to bring, viz., a complete series of Mr. Muybridge's wonderful instantaneous photographs of trotting horses, kindly sent me by that gentleman. The sight of these pictures will, I doubt not, be as interesting to the members of our Society as it has been to men of science, artists, &c., throughout Europe and America.

"I venture to think that this novel application of the art has a great future. Certainly, Mr. Muybridge, of the "far West," deserves all credit for the skill and enterprise with which he has accomplished so difficult a task.

"As will be observed, each picture bears its own explanatory remarks upon the mount; and in regard to the *modus operandi* of their production, I cannot do better than give it in Mr. Muybridge's own words. He says:—

"I decided upon the "Patent Stereographic" for several reasons.

"1st. They have a much greater depth of focus than either the No. 2 or No. 3 B (of which I have a pair of each), and will permit the horse a greater latitude in his track; I therefore thought that although the *C* lenses might work much quicker, there would be great danger of their being out of focus, through the horse not being kept on the plane intended.

"2ndly. My shutters are constructed on this plan—



represented at the instant of their respective openings passing the lens. They are drawn up and down respectively by means of powerful rubber springs, released at the same instant by the action of an electric battery. I found by experiment there was a limit to the width of the opening, in order to obtain a photograph of the horse *without* apparent movement, and I could not advisedly use a width to permit a *full* exposure of a much larger lens than the "Patent Stereographic." I might be enabled to use the No. 3 C by having an entire new set of shutters made, but think I shall be enabled to obtain good detail—even with brown or bay horses—by the use of an emulsion I am now experimenting

with, employing the "Patent Stereographic" lenses. I think I have now about 65 or 70 of them." I am, dear Sir, yours
thfully,
J. H. DALLMEYER."

The prints accompanying the letter having been passed round for inspection, Mr. BIRD read a paper on "The Photography of Vision" (see page 260).

The PRESIDENT asked if any of the members were desirous of speaking. There being none, he added that he hoped Mr. Bird would keep his eyes open, and keep the Society well informed of any similarly interesting features in visual photography.

After a vote of thanks and some other proceedings,

Mr. YORK exhibited an instantaneous shutter, which was examined by the President and members. The principle of the shutter was the dropping of a metal plate through an aperture pierced in the tube of the lens, as suggested by Capt. Abney, in front of the diaphragm. Mr. York claimed for his shutter an instantaneous exposure combined with freedom from vibration.

The PRESIDENT expressed the pleasure of the meeting at the presence of Mr. Mauners Gordon. He hoped that, as the discussion paper for the next meeting was not filled up, some gentlemen would see their way to introduce some matters of interest.

Mr. GORDON replied to the remarks of the President, and said he was excessively glad to find himself once more among them.

The meeting then stood adjourned till June 10th.

PHOTOGRAPHIC SOCIETY OF VIENNA.

An ordinary meeting of the Society took place on the 1st April Dr. E. HORNG in the chair.

After the transaction of the routine business,

The CHAIRMAN drew the attention of the members present to a collection of eight views of the fall of an avalanche at Bleiberg, sent for exhibition by Herr A. Beer, and took advantage of the opportunity to make some remarks on the great importance of photography in criminal and judicial inquiries. More especially, he pointed out that the most skillful draughtsman is unable to depict, with complete accuracy, alterations and injuries due to natural causes in the very short time during which they often remain stationary. He also referred to the arrangement adopted in France, by which photographs are used to give a correct idea of the condition and progress of building and engineering works; also in the Prefecture of the Police in Paris, where not only portraits of criminals are carefully preserved, but photographs are also taken of the prominent objects and localities illustrating the occurrence of accidents and crimes. These are often of more service than the most carefully drawn up oral or written evidence. The president further expressed a wish that the Government of Austria might, in the interest of the public service, avail itself of the aid of photography as well for administrative and judicial purposes, as in scientific investigations.

The SECRETARY read a paper by Herr A. Ott, of Hottingen, near Zurich, on the employment of photo-lithographie transfer papers. In this paper the author first gave a short historical sketch of his subject, and then pointed out some defects to which the preparation of these papers are subject, concluding with a description of a method for producing them, in which the danger of altering their dimensions and shape is avoided.

A paper by Dr. J. Seiffert, of Tübingen, was read by the CHAIRMAN, on the value of the radiometer for photographic purposes. After a number of experiments conducted both by himself and other investigators, the author maintained, in opposition to the commonly received opinion to be gathered from various text books and manuals, that the instrument is only of importance for thermometric purposes, and can in no way be used as a photometer or actinometer.

Herr SCOLEK described the instantaneous process of Kreh, which had been mentioned at the last meeting, and gave an account of its successful results. It depended essentially, first on the preparation of the collodion, and secondly in the employment of two developing liquids, one for the general image, the other for the details.

Herr LUCKHARDT explained that he as well as Herr Angerer had received on trial a supply of gelatine emulsion and some dry plates prepared by Herr Obernetter, of Munich; the sensitiveness of these plates is so great that it is impossible to work with them in ordinary dark rooms without fogging. Herr Obernetter has produced plates that only require 1-20th part of the exposure to which wet plates must be subjected, and ordinarily sends out to his friends and customers plates which are five times as sensitive as the collodion plates in common use. The speaker pointed out the great advantage offered to portrait photographers by

using plates of this extreme sensitiveness, particularly in the taking of groups and children. He also complained of the inexcusable carelessness of the Custom House officers, who paid no attention to the label on the lid of the box containing the plates. The terms of the direction expressly warned against the box being opened anywhere but in the dark; but, not content with disobeying this instruction, they had even removed the tinfoil wrappers from each plate, to ascertain the net weight.

Dr. HOKING referred to his remarks at a former meeting on this danger in importing dry plates. He explained that when a large number of plates were ordered, arrangements could be made for the Custom House officers to examine the packages at the house of the importer, though this plan would be too expensive in the case of small orders. Similar complaints had been raised at Berlin, and in one case a successful attempt had been made to resensitize plates that had been submitted to similar treatment.

Herr ANGERER stated that he had himself fetched his plates from the Custom House, and in this way had been able to arrange for the whole package to be weighed without breaking bulk. He exhibited the plates which he had exposed at 4.30 p.m., one for five, the other for fifteen seconds; both were fully exposed photographs, the latter only much more intense. With wet collodion he would have been compelled to expose for forty-five seconds at the same hour. In his dark room, in consequence of observing signs of fogging on the first plate that he attempted to take, he had been obliged partly to cover the windows with a curtain, partly to provide the panes with a second layer of yellow paper. The speaker expressed the very high opinion he entertained of these plates, and pointed out the many advantages they offered, especially in taking views of interiors and groups.

Herr HAACK reported on his experiments with the plates sent by Motter, of Amsterdam. He confirmed the statement that they only required one-half the ordinary exposure, but could not observe that they manifested a greater sensitiveness for yellow objects. The negatives were developed strictly according to the instructions of Herr Motter, but turned out rather weak.

Herr ANGERER preferred the brown tone of the Obernetter plates to the blue-grey tone of those of Motter.

The PRESIDENT pointed out that as far back as 1874 he had drawn attention to some of the advantages of gelatine emulsion. Unfortunately, no member of the Society (with the exception of Herr Haack) had taken up the subject, while in England the improvement of the process had been diligently worked at, and now for some time gelatine dry plates and dry gelatine emulsion had been produced on a commercial scale in that country. He expressed a hope that the results now brought before the meeting would cause the gelatine emulsion process to be more actively studied.

Talk in the Studio.

PHOTOGRAPHIC EXHIBITION.—An exhibition of photographs will be held at 5A, Pall Mall East, in October, by the Photographic Society of Great Britain. Further particulars will be duly announced.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The last meeting of this Society before the recess will take place on Thursday next, June 5th, at the Society of Arts, Adelphi, at 8 p.m., when papers will be read by Mr. Brittlebank and the Honorary Secretary.

PORTRAITURE BY ELECTRIC LIGHT.—His Royal Highness the Prince of Wales one day last week honoured Mr. Vanderweyde with a sitting for a portrait by the electric light, and expressed much interest in the arrangements.

REMARKABLE PHENOMENON.—A remarkable occurrence with reference to the photographing of a church weather-cock at Tenby is reported. At the time nothing was observed by the artist but the object upon which he was engaged; but on the development of the plate the outline of a boat, with colours flying fore and aft, was distinctly visible about two-thirds up the spire, in a reverse position. The photograph was taken at a quarter past six, and about that time the gunboats were launched at Pembroke Dock. It is thought that it is a mirage of one of the gunboats soon after launching.—*Lancet*, May 24, 1879.

To Correspondents.

SCOPTICON.—The popular edition of the Autotype Manual is to be obtained of the Autotype Company, 36, Rathbone Place, London, W. The price is one shilling. Between the two lenses you mention there is not much difference in performance. They are both excellent.

HOWARD.—The lens you describe is undoubtedly a landscape lens. When sent out by the maker it would have a cap or cover fitting the end. This has, doubtless, been lost. You can make another of cardboard or pasted strips of paper. The small tube is a step to regulate the aperture.

C.—We cannot tell whether the picture is copyright or not, as we know nothing of the circumstances. It may not be safe to copy it; but it is quite safe to leave it alone, and right, besides. It is illegal to put the word "copyright" or "registered" on a picture which is not so. The demands on our time do not permit us to answer questions by post which are addressed to the Editor.

J. BERENGER.—We regret very much that we never have such leisure as you imagine. Our engagements fill the whole of our time, and often leave us in arrears. You will find some good information on the subject in Lake Price's book on photography. You will not find it convenient to have the dark room exposed to the full glare of the sun in summer.

R. G. D.—The portable tourist camera which we devised for our own use, and described some years ago, was made by Mr. Megher. We do not, as a rule, commend the work of special makers in this column; but the manufacture of the camera to which we refer was excellent and very satisfactory to us.

HYDROGEN.—We hope to give full particulars of the portrait illumination by gas-light, in our next, as employed by Mr. Laws, whose studio we visited for the purpose of seeing the arrangement.

G. G. F.—In all the negative processes, that is, the methods of producing negatives, salts of silver are employed. No other substance has yet proved sufficiently sensitive for camera images. Negatives may easily be reproduced on carbon tissue, and with great advantage. But the field for experiment in discovering a new method of producing negatives lies open to all comers still!

TYRO.—If carefully performed, the method of precipitating the silver from an old bath by means of zinc answers very well. Place the solution in a jar, and immerse a strip of thoroughly cleaned zinc, which should be long enough to project above the jar, and so be easily lifted to stir with, and so hasten the operation. After it has remained for twenty or thirty hours, test the solution by the addition of a pinch of salt. If this causes no turbidity, it may be concluded that all the silver is thrown down. Pour off the supernatant water, and wash the precipitate very thoroughly. Then place in an evaporating dish, and pour on nitric acid. By the aid of gentle heat the precipitated silver will be converted into nitrate. After the nitric acid has been evaporated by continued application of heat, the nitrate of silver may either be fused, or washed and recrystallized.

ANXIOUS.—The change in the pictures produced by the dusting-on process suggests that the bichromate is not perfectly removed. The best practice is, we believe, after developing the image by the powder, to wash with a saturated solution of borax in spirit. Then dry, and afterwards immerse in dilute nitric acid. Finally, wash well with water until all bichromate is removed. After being properly washed, the picture should not alter at all. Much personal skill and care are required to succeed thoroughly with the process.

B. Y.—If the gelatine plates are properly managed, sufficient density should be obtained in the development. If that have not been effected, then you may thoroughly wash the plate, and intensify with acid pyro and silver; or, better still, with a solution of iodide of mercury. 2. You may try the usual methods of reducing intensity, but it is matter for experiment. It is easy to avoid the necessity. 3. Photographs are registered at Stationers' Hall.

P. C.—The most recent works on portraiture, &c., are the two by Mr. Heighway, published at the Office of the PHOTOGRAPHIC NEWS.

PYRO.—You cannot very well show gelatine negatives as positives. In our opinion the best system is to receive the money before sitting; but unless the system be thoroughly and properly carried out it is sometimes difficult to manage. If persons sit and receive proofs and then take no further notice, you can recover in the County Court. In some cases we have known a magic lantern system is kept in order ready to show a portrait on the screen as soon as it is taken. There are so many considerations to be taken into account that no general rule can be laid down, still less can any efficient advice be given in the space limited to answers to correspondents.

R. BIGGS.—Many thanks.
Several Correspondents in our next.

The Photographic News, June 6, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHING A MIRAGE—M. JANSEN'S OBSERVATIONS AND OBSERVATORY AT MEUDON.

Photographing a Mirage.—The *Lancet* records an instance of photographing a mirage. It appears there was a desire on the part of a Tenby photographer to secure a picture of the tower and weathercock on Tenby church. The photograph was attempted in the evening at a quarter past six, when at this season of the year there would be ample light for the purpose. When the plate came to be developed, there appeared upon it, about two-thirds of the way up the spire, the distinct outline of a vessel with colours flying, but in a reversed position. Tenby is rather more than ten miles from Pembroke Dock, it seems, and about the time in question there happened to be a launch of a gunboat, on which occasion, as everybody knows, a good deal of bunting is displayed. The explanation offered, therefore, is that the reverse image secured upon the photographer's plate at Tenby was the reflection of this gun-boat at Pembroke Dock against clouds, or evening mist, which was sufficiently luminous to show the image. It would be interesting indeed if this were confirmed. There is little doubt that a mirage that can be appreciated by the eye is quite capable of being photographed, but we should like to have better proof that this has been done at Tenby. Several ways occur to photographers whereby such a result as that detailed in the *Lancet* could be secured, the simplest being that the plate employed was an old one, and had previously been impressed by the image of a vessel. That this was reversed in the spire picture of course goes for nothing, since the plate might have been employed the other way up when previously used. We all know how to make ghost pictures by securing glass plates upon which a former image has been so vigorously developed as to be positively etched upon the surface of the glass. Something of the same kind may possibly have happened in the case of the Tenby picture, and as the photographer had doubtless many times before occupied himself in the depiction of shipping, it is not very difficult of belief that he may have got an old plate etched with an old image. At the same time, as we pointed out not very long ago in these columns, the photographing of a mirage should not be difficult, where the scene is plain to the naked eye. The Dover mirage of 1876, which we have before referred to, might certainly have been depicted in the camera if the happy thought had occurred to anybody to make the experiment. On this occasion—a very hot afternoon—the town of Boulogne opposite was distinctly seen represented in a mirage. Boulogne is thirty miles distant from Dover, and yet the dome of the cathedral, and that other well-known landmark, Napoleon's Pillar, as likewise the Crescent Walk, were all visible to the naked eye. With the aid of a telescope it was possible to see the entrance of the port, the lighthouse, the shipping, and surrounding houses. The adjacent coast would likewise be traced in the mirage, the formidable Cape Grizney, with its lighthouse, together with several villages and farms in the vicinity. Some of the houses, we are told, towards evening had their windows lit up by the declining sun, and stood out with extraordinary clearness, while at one time a locomotive was seen to leave Boulogne and travel some distance in the direction of Calais, its track being marked by puffs and wreaths of white smoke. If a mirage can be seen as distinctly as this—and the Dover phenomenon is only one out of many on record—there should be no reason why the ghostly picture could not be secured upon a collodion film. Still we should desire an opportunity of inspecting the Tenby mirage photograph before pinning our faith to its authenticity, since it is the first instance on

record, we believe, of photography having made record of such a phenomenon.

M. Janssen's Observations and Observatory at Meudon.—M. Janssen is still working hard at his interesting solar observatory at Meudon. Gradually, but surely, he is perfecting his method of observing the sun by photography. M. Janssen stands alone in his researches in solar photography. For the past ten years he has devoted himself almost entirely to the subject, and his reward has been that he is appointed chief of the observatory at Meudon, where he has at his disposal some of the finest instruments in existence. M. Janssen's last important discovery was, as our readers may remember, the fact that when a picture is taken of the sun with the briefest exposure, there is a vast amount of important detail to be seen. In some portion of the surface the sun appears covered with round granules; in others, these are comet-shaped or elongated, implying motion. The picture in this instance was secured by an exposure of $\frac{1}{5000}$ of a second, and the result having been so satisfactory, M. Janssen now proposes to work only with very brief exposures. New apparatus is being constructed for the purpose, which will permit exposures being regularly made at intervals of two minutes, or for something like $\frac{1}{2000}$ of a second, the pictures of the solar disc, without enlargement, measuring not less than fifty centimetres. This leaves our own observatories at Kew and Greenwich far behind; and if we desire to learn anything of the physical character of the sun, we must in future go to Paris for M. Janssen's results. He still employs his *revolver* apparatus, which he first used at the Transit of Venus operations, and the successive views obtained within two minutes of each other have already given valuable results. In a word, it is found that two images of the sun taken with but a short interval of this character between them differ materially from one another. The phenomena which we have chosen to designate as spots, change, apparently, much more rapidly than is supposed, and within two minutes a couple of pictures of the sun may be secured that by no means resemble each other. Thus we have ample proof that changes are for ever going on in the sun, and there seems little doubt but that M. Janssen will very shortly be able to tell us something more of these changes through his constant watchfulness with the camera. The palace of Meudon, with its park, a lovely suburb of Paris, was, our readers may remember, almost destroyed during the last Franco-German war, and when M. Janssen was permitted to occupy the spot with the instruments that he had carried to Japan and brought back again after they had served to observe the transit of Venus, the chateau was a mere shell with scarcely more than the walls standing. M. Janssen's investigations have, however, turned out so well, and appear to be so full of promise, that the French Government has now decided to build him a structure fit for an observatory, with telescopes and cameras furnished with the latest improvements. When he has the benefit of these improvements we may look to the energetic French photo-astronomer for further interesting results of his work.

THE PHOTOGRAPHY OF VISION.

BY W. S. BIRD.*

THE existence of visual purple, and its special relation to light acknowledged, the more ardent investigators fancied optography discovered, and concluded that by supplying conditions which should temporarily fix the image on the retina, incontrovertible evidence might be obtained of the fact. It was not unreasonable to suppose that a visual image strongly impressed on the retina, and materialised in actual pigment, would remain there sufficiently long to record its own evidence. If so, such evidence in cases of violent death by accident or crime would indeed be conclusive and

* Continued from p. 262.

minister to justice. To solve the problem was difficult, for the vital action which furnished continual supplies of colour to the retina and the decolouring effect of light were compensatory. To obtain an optograph it was necessary this compensation should cease. Various experiments were made; Kühne had satisfied himself that while the visual purple was not immediately destroyed by death, yet that the power of renewing it was obliterated, and the conclusion followed that to fix an image on the retina long enough to prove his theory, he must still follow photographic practice and cap the vital lens immediately after exposure. Not only must he thus secure the sensitive retina from further access of light, but also stay the vital compensating action by destroying the life. But before arriving at this double conclusion, he experimented with the freshly extirpated eyes of rabbits, fixed these immovably for a few seconds before a brilliantly illuminated object, then shut out the solar light and examined the retina by the sodium flame. The results were unsatisfactory; for although the form and relative site of the object were discernible on the retina, the outlines were too vague and indeterminate to convince the doubtful. Kühne attributed this partial failure to the opacity both of the cornea and of the retina which death produces. Light would be hindered in its passage through the eye to the retina, and that membrane probably lowered in sensitiveness. He, therefore, sought to overcome the obstacle by experimenting on the living animal, which he placed before a square opening cut in a window shutter; the creature's head was first covered with a black cloth to ensure full development of the visual purple, then the light was allowed to act for a couple of seconds, and the animal immediately decapitated. One eye rapidly extirpated by the light of a sodium flame was plunged into a solution of alum, and the other eye left in its orbit similarly treated. Next morning, the two retinæ were detached, and there was distinctly visible in each the square image representing the luminous opening, and more accentuated in the second eye than in the first. Upon exposure to light, the image disappeared by the decolouration of the whole retina. Thus encouraged, Kühne undertook to photograph more complicated objects, and succeeded with rabbits, under the conditions described, in obtaining perfectly distinct impressions of a window; not merely the square opening, but the vertical and horizontal bars were distinctly visible. He succeeded thus far equally with eyes in a recently decapitated head, but the exposure in such case was much longer than when the experiment was conducted with the living animal. The difficulties of such inquiries were, of course, very great, but Kühne believes not merely that optography is an established fact, but that it is possible to obtain landscapes and portraits photographed on the retina, when the conditions can be brought under greater control.

Something must be allowed for the enthusiasm of the discoverer, but the ascertained facts are sufficiently striking to give probability to the theory, and remarkable enough to account for the romantic statements which have had some currency in the newspapers. The facts are strange, for it is almost inconceivable how any mechanism of the sort can adjust itself to the varying experiences of one minute's vision. The rapidity of the impressions received, their constant succession, the variety of objects far and near discerned in a single glance are so immense, that it is bewildering to believe that every gradation of light and shade registers itself in the minute structure of a delicate membrane, by waves of purple colour momentarily modified in harmonious correspondence with the impact of reflected light! The retina becomes the microcosm man has been said to be, and that we are fearfully and wonderfully made may be better realized now than in the old time. This marvellous adaptation of means to an end is paralleled by the modification of the curvature of the anterior lens of the eye to enable us to focus distance. For sharp definition in the camera, either the lens or the sensitive plate must be shifted for different planes of distance, and a similar adjustment is necessary in the eye.

From any distance exceeding seventy yards, rays of light entering the eye may practically be considered parallel, and no adjustment is required; but between these seventy yards and four inches, which is the average point of proximity to the eye for an object to be clearly seen, there must be adjustment. If we look through the meshes of a net at an object beyond it, both cannot be clearly seen at the same moment. In the interval by which the two objects are discerned, the ciliary muscles act to increase or diminish the curvature of the front surface of the lens. Conceive the almost instantaneous rapidity with which we discern objects scattered over a distance of fifty yards, and yet at every point of the distance each object distinctly seen was focussed on the retina by a distinct change of curvature of the visual lens! One reason why viewing a picture or sculpture gallery is so much more fatiguing to the eye than continual change of landscape, is, that in the one case there is perpetual action of the ciliary muscles to accommodate the varying convergence of the rays of light, while in the other the parallelism of the rays makes no such demands on the organ. It is as wonderful a power of accommodation to optical necessities, and as marvellous in itself, as the colour changes in the retina for the performance of its function.

Without venturing to express an individual opinion on the discoveries and theories of Boll and Kühne, but willing to wait for further confirmation, I have thought a statement of these latest novelties in vital optics worthy the attention of the members of this Society.

COLLODIO-BROMIDE WITH GUM GUAIACUM.

CAPTAIN ABNEY, writing to the Society's Journal, says:—

"The members of the Society are invited to try a modification of the ordinary washed emulsion process, as it is believed that it is valuable in more ways than one. The modification consists in adding to the washed emulsion one-sixth part of alcohol which has been saturated with gum guaiacum. The plate is coated in the ordinary manner, and the film takes a greenish blue tint when dry. The drying may be done 'spontaneously,' or it may be accelerated by the warmth of a drying room or box; but the temperature should not exceed 120°, since the gum then fuses, and the film repels the developer. Those plague spots that refuse to develop have not been found to be present except in one or two plates, and the fact of their presence has been recognised before placing them in the dark slides, since they remain of the ordinary colour of the bromide whilst the surrounding portions are coloured as stated above. It is something to be able to see the spots before development, and on this account alone the addition of this gum is valuable. To develop, the plate is flooded with alcohol, and then washed and treated with the alkaline or ferrous oxalate developer in the usual manner. The film, being very porous through the removal of the gum, readily takes any amount of density, and it is amenable to intensification with pyrogallie acid and silver nitrate. If a phantom image be developed first by a weak developer, it may be built up as the operator may choose. The film has no tendency whatever to leave the plate; even the most horny film becomes glued to the surface, and, as before stated, easily permeable to the developing solutions.

"The gum acts as a preservative, as will be seen by the simple experiment of dissolving it in alcohol, and pouring the solution over a clean plate. On evaporation of the alcohol, a hard transparent film is left. The keeping qualities of these plates between exposure and development have yet to be tested. If they keep as well after exposure as they do before, they will be very useful plates for the tourist. The writer appeals to photographers to try the process, in the hope that it may lead by experiment to the introduction of a really good preservative which may be applied to the plate with the emulsion itself. Gum ammoniacum has been already used by Mr. Stillman, but

its comparative insolubility is a great drawback to its use as a preservative. Gum guaiacum combines with bromide, hence it is efficient on this score.

AN EXPERIMENT WITH ORANGE PEA-GREEN COLOUR FOR STUDIOS.

MR. COCKING, in the *Photographic Journal*, says:—

"Whatever the scientific explanation may be, it is nevertheless a startling fact that if the unglazed parts of our photographic studios are coloured orange pea-green, certain results follow which were not present when coloured with the hitherto orthodox blue tint. Having only recently painted my own studio with this orange pea-green colour, I record a few effects which have forced themselves upon my notice.

"Upon the *sitter*, the effect was one of pleasantness, inducing vivacity, both of look and bearing, inducing the remark, 'How bright and cheerful the studio looks!'

"Upon the *photographer* (in addition to the same facts as experienced by the *sitter*) the effect was that of increased power of perception, by enabling him to estimate the amount of red colour in the faces of sitters, and thereby assisting in the calculation of the necessary duration of sittings.

"Upon the *sensitized plate* the effect was also very marked, inasmuch as the general exposures were shortened considerably; and in one instance a *sitter*, with a full amount of red colour in the face, was taken with about half the exposure in presence of the orange green colour, which three days before was required in presence of the old blue colour. Also in this case another very important fact was observed, viz., that the resulting negative was much smoother on the face, requiring but a minimum of retouching as compared with the negative taken with the blue colour in the studio.

"The materials I used were white lead, ultramarine blue, lemon chrome, and orange chrome, as procured at the ordinary oil shops. The tint, that of the green pea pod when the sun acting upon it just takes away the purity of its original green colour, and imparts a slight orange tint.

"It remains for *time* to show whether *light* acts upon this peculiar colour, and, consequently, whether the results are maintained or not."

THE "NEW DEPARTURE"—ITS THEORY AND PRACTICE.

BY J. TRAILL TAYLOR.*

WITH a considerable amount of gratification have I observed that at least one gentleman has had the enterprise and courage to make a "departure" from the well-worn routine that prevails in portrait galleries.

In the number of the *Bulletin* for January last, Mr. D. N. Carvalho describes the steps by which he was led to discard the time-honoured and orthodox blue colour so long peculiar to the interiors of photographic studios (or skylights), and to substitute therefor a colour which may fittingly be designated a very pale pea green, this being attended by a remarkable reduction in the time required for exposure. The reduction is alleged to be in the ratio of fifteen seconds to thirty or forty seconds. This represents a gain of so important a nature as to warrant us in bestowing upon it a more than ordinary share of attention.

Before proceeding to offer some remarks both of a theoretical and practical nature upon this subject, I may state that in the practical part of the subject—the advantage to be derived from the use of such a colour—my views are quite in accordance with those of Mr. Carvalho, but I am unable to accept the theories upon which his deductions are based. However, "not to put the cart before the horse," I shall

first of all discuss the theory upon which our views are likely to clash, and then proceed to the practical bearings of the subject, on which we shall doubtless find ourselves in entire harmony.

The following is a digest of the theory advanced by Mr. Carvalho:—A wine-glass, if filled with a transparent blue liquid and interposed in the path of a ray of light, transmits that ray not of a blue, but of an orange colour, as proved by its shadow being received upon a sheet of white paper; that the principle of changing the colour of the ray is not confined to transmission through a coloured medium, but also acts by reflection; for example, a blue reflector causes the emergent light to be complementary to the colour of the reflector, or orange, and so forth with regard to other colours. This being the case, if it be desired to secure a beam of reflected light of any particular colour, it is only necessary to ascertain the complementary colour to that required, and make the mirror or reflector of that hue. An orange coloured reflector does not, according to this theory, reflect orange, but blue, which is the opposite of, or complement to, that colour. In like manner a blue reflector projects an orange beam; with a red reflector, green will be reflected. Having settled the theory, Mr. Carvalho deduced this conclusion—that seeing it is desirable to have a violet light upon the *sitter* in the studio, the surroundings must be of the colour complementary to violet, namely, a yellowish green; and by painting the studio this colour a great degree of rapidity is obtained consequent upon the flood of violet light which thus falls upon the *sitter*. This is the theory of the "new departure," as far as I am able to understand it from the letter of Mr. Carvalho, and I now proceed to show cause why it is not likely to be accepted by physicists.

When light is reflected or radiated from a matt white surface, such as a white card, the different coloured rays are reflected in the proportion to constitute white light. This is an axiom of universal acceptance, as also its antithesis, that if light falls upon a body that entirely absorbs it, such body does not reflect light, and consequently appears black. But equally axiomatic is it that if light falls upon a coloured body which does not entirely absorb it, there is always some reflection of white light and of light of the same tint as that of the absorbing body; the reflected rays would be white light, if to them were added those which were absorbed by the coloured body, and the one set of rays, the reflected, are complementary to the others which have been absorbed. An opaque reflector of any definite colour absorbs the colours complementary to that of itself and reflects only the latter. Thus blue reflectors reflect blue rays; so with yellow, green, red, and other colours.

This is also the case with transmitted light; by means of blue glass window panes we flood the room with blue light, and if we wish to exclude from our dark-room those rays which act detrimentally upon our sensitive plates, we admit only orange or ruby rays, which we do through orange or ruby glass. Although Mr. Carvalho found that the wine-glass filled with blue liquid cast an orange shadow upon the sheet of white paper, he would have found that by employing a glass bath having parallel sides as the medium for holding the fluid, the beam of light transmitted, or the shadow, was of precisely the same colour as the fluid through which the light was transmitted. So with coloured glass or transparent paper. If we wish a room to be illuminated with yellow light, we employ yellow glass; and in order to secure the maximum of illumination with the minimum of chemical action upon our sensitive surfaces, we admit the light into our dark rooms through a medium of the same colour as the light we wish admitted. If Mr. Carvalho's theory were correct, of two glass caps for the lens, one fitted with violet and the other with orange glass, the latter would transmit more actinic light than the former. But in practice the opposite is the case. From the foregoing considerations will be found my reasons for dissenting from the theory of the "new departure," as given by Mr. Carvalho.

But when we discard theory and come to practice, I am entirely at one with this gentleman. The colour which he

* *Anthony's Photographic Bulletin*.

finds so advantageously to supplant the time-honoured blue paint of the studio is a delicate pea green. So far from being unpleasant to the sense of sight, the eye rests upon it with a far greater feeling of satisfaction than it does upon the cold blue or grey so redolent of the studio interior. I am not aware of the methods made use of by the Messrs. Anthony in compounding this pigment, which is sold in convenient cans ready for use after dilution, but a good idea of it may be had from making a mixture of the pigments so well known as deep chrome and Prussian blue. Now this forms a mixture that radiates a large amount of what has been termed actinic light. A proof of this is to be found in the fact that if a piece of cloth this colour be affixed to a larger piece of a blue colour, and both be photographed together, the greater density of the green in the resulting negative clearly shows that it reflected more actinic light than the blue which served as its background. The physiological fact that it is more grateful to the eye, added to the chemical fact that it reflects a large amount of chemically active light, entirely prove the utility of the new colour as one which may much more fittingly than blue be used with excellent effect as a coating for the wall of the studio.

To anyone who would affirm that this is contrary to true theory, I would reply—not so. Our ideas concerning actinism have undergone quite a revolution since Robert Hunt, in years now long gone by, promulgated his theories concerning the chemical action of certain colours of the spectrum. In the old days of the Talbotype—or Calotype—iodized paper, the iodized Daguerrotype plate, or the iodized collodion with its pyrogallie development, there was much force in the remark that the photo colourific value of blue was white, while that of deep yellow, orange, or red was black. But this notion received a death-blow by the introduction of bromine and the bromides, by which the yellows, reds, and blues have assumed a more accurate position in the scale of colorific representation.

From an experiment I made last summer in the Orkneys, I discovered that the rays emitted by the setting sun in these latitudes were devoid of photo-chemical power to a singular extent. These rays beat fiercely upon one side of the face of a gentleman whom I was photographing in a garden, and when the image was examined upon the focussing-screen of the camera the opposite side was in deep shadow. But when the image was developed no trace of the predominating action of the solar light could be seen, but, on the contrary, the opposite side of the face, which was visually the darker, showed as if it had been the better lighted of the two.

This subject is an interesting one, and Mr. Carvalho deserves thanks for bringing it forward for discussion.

POSING THE SUBJECT.

BY O. W. OSBORN.*

IN my communication which appeared in the March number of the *Practical Photographer*, I there mentioned that I would give a few hints on various subjects connected with photography. So, seeing that nearly everything was pretty well written up, except lighting and posing, and as the former was treated of in last month's issue, I conclude that a few remarks on the above-named subject would not be out of place.

In the general make-up of all pictures, whether they be portraits or landscapes, it should be the aim of the photographer to secure the appearance of solidity as much as the nature of the subject will admit. This very desirable quality is produced by two methods: first, by so arranging the subject that the picture, when completed, shall not appear top-heavy. As an illustration, we will take a full-length picture of a young lady. It is presumed everything is in order under the skylight, so we will direct the lady to assume her position under the same. Take the high-back posing chair, and move it around to within a few

feet of the side light, but far enough away to allow your subject to be placed on the side next the light, without coming closer than about six or seven feet to it. Now turn the body of your subject around, so that if she was looking straight ahead, her eyes would be directed to a point on the wall about opposite the end of the light farthest from the subject; adjust the chair so that the young lady may rest one or both arms on it, as your taste may dictate; always have the back of the chair lowered sufficiently to allow the subject to lean slightly thereon. Take a piece of yellow paper, the size of a sheet of commercial note, and place it in your subject's hands, and direct her to assume the appearance of having received a letter from some friend, while you place a neat little piece of paper on the chair seat to resemble an envelope, and also place a little stand or table of some kind on the side of the picture nearest to the light; throw some part of the drapery over the back of the chair, and let one end of it fall gracefully to the floor on the side of the chair farthest from the subject. Place a vase of flowers or a small piece of statuary on the little stand. Now see that there are no ugly folds or other obnoxious things to be seen, and, after having elongated the lower extremity of the lady's dress, so as it will not appear too compact, you may adjust the curtains of the sky and side lights so they will do their duty, and not let in a flood of uncontrollable light. You may make the exposure, being careful to give time enough; for more of delicacy and roundness depends on that one operation than a great many are inclined to believe.

The reason I have gone so much into the details of the above, is because so many are careless, and even if they have those little things, such as draperies, chairs, and tables, which add so much to the beauty of a picture, and which are the only assistants in securing pyramidal composition with single figures, may seem too diffident to use them.

Now suppose we had not used the accessories above, but, instead, had placed the lady in a common chair, with her face fronting the the instrument, and had placed that characteristic old book in her hand, and had used no fine interior background with the light falling gracefully through an opening in a cottage window, but used the old ground elevated five or six inches from the floor, and have had made her a picture after that style, with the entire sky and side light thrown wide open, which do you suppose she would take, provided she had her choice? I venture the assertion that she would not take the last one, no, not even if you would offer to throw in another book just to balance the picture, you know. Of course, some one will say, could not this person have been posed after some other manner, and still have got good pictures? Yes, certainly, a variety of ways, and have them all good, too. She could, of course, have been treated to a sitting posture, with one arm leaning easily and gracefully on the back of the chair; or to an old style bust; or, better still, a vignette Rembrandt, provided she was not too lean to make a nice shadow picture; or to any other style, provided the photographer kept everything in harmony, and observed the laws of gravity, one of which is, that any leaning object, which it is intended to represent as being solid or firm in its position, must be provided with something visible in the picture to serve as a support. Take any picture where the subject is represented as leaning upon an object of some kind for a support, and remove that object, no matter what it is, and your subject immediately has the appearance of falling. I repeat, that if the laws of gravity and pyramidal composition be observed, there will not be much difficulty in securing good and artistic pictures, at least so far as the posing is concerned. Not long since I had the pleasure—if such it might be called—of seeing a photograph made by one of those peculiar kind of photographers who know too much about the picture business to take any photographic

* Continued from page 226.

journal, which was enough to make a stair laugh. It represented a young lady standing by a high-back chair with one arm resting on the same, which was all well enough; but the operator, not knowing what to do with the other arm, concluded to get up something peculiarly fine, so a happy idea entered his noddle, and he thrust a very conspicuous jardiniere stand into the composition, but unfortunately on the wrong side of the subject, for he put it by the side of the large chair, and between the chair and the instrument, and so far away that the lady was compelled to lean forward considerably in order to be able to barely rest her fingers on the edge of the stand. You see how ludicrous such an arrangement would appear, with all the accessories on one side of the subject, and nothing but blank space on the other side. Such violations of all art principles are, I am sorry to say, only too common. If Sarony had been posing that subject, he would have placed that stand on the other side of the picture, or have left it out entirely. In portraits of elderly persons, and especially of the male portion of humanity, it is best not to give too much animation to the subject. They should as a general thing be turned somewhat away from the light, and the head and body should be made to face in nearly the same direction, but not rigidly so, as some latitude is always allowable, and therefore the body could be turned from the instrument so as to give a three-quarter view, while the face could be turned a little more toward the instrument, and the eyes be made to follow in the same direction, being turned still a little more than the head. Of course this must not be exaggerated, for then all the solemnity of age would be destroyed, and the vivacity of youth substituted in its stead. Always allow the eyes to be turned a little, and I may say but very little, more in the same direction in which the head is turned. Nothing could be worse than to see this rule reversed, and observe the head turned in one direction and the eyes in the opposite direction. If the head is turned to the right, it suggests the idea that something is attracting the attention of the person in that direction, and, as a matter of course, the eyes should certainly follow in the same direction.

In some cases it is the artist's intention to avoid the appearance of pyramidal composition, and so the order of things is reversed; the most noted illustration of which is the celebrated picture by Thorwaldsen, called "Night," and represents an angel floating in the atmosphere, bearing in her arms two infants, "Sleep" and "Death." Here, as I said before, all idea of such composition is lost as the lines drawn from the extremities of the wings to the feet of the principal figure would represent an inverted pyramid. I have seen in simple bust portraits such gross violation of art principles, that a word or two on that point may not prove unwelcome. Now it seems as though the merest tyro ought to be able to pose a person for a bust picture; and yet, even simple as it is, many forget one of the most important things, and that is, the direction of the eyes. They will pose the body and the head as they should be, perhaps the body turned a little toward the light and the head somewhat away from it, and when ready to expose the plate, will tell the sitter to "look right into the instrument," forgetting, as it were, that such a direction of the eyes in connection with a position similar to the above is productive of anything but a first-class picture. Of course, such oversights as indicated above are not of every day occurrence, but that they do occur once in a while cannot be denied. It may be that they are caused by a rush of business, but if such is the case, I would advise that they be reduced to the smallest number possible; for it is a fact, that negligence and oversights of that kind are very good advertisements for the gallery across the way. I will again urge the importance of closely scrutinizing the sitter just before making the expose, for by so doing you avoid a great many re-sittings.

ENLARGEMENTS ON CANVAS BY TRANSFER.

This process is simple and excellent, and is the most efficient mode we know of obtaining an image on canvas, and, being a transfer method, all the risk of imperfect fixation or imperfect washing which attends the method of printing on canvas direct is avoided.

The collodion must possess a good body. If it be prepared expressly for this operation, it should not possess less than ten or twelve grains of pyroxyline to each ounce of solvents. A good commercial sample of bromo-iodized collodion may be used, to each ounce of which five or six grains of pyroxyline—or, rather, we believe, papyroxyline—arc added. Any of the known modes of producing a good positive image on collodion may be employed: those methods described as suitable for photo-crayons, with pyrogallie acid development and gold toning, will be found the most efficient of any.

The prepared canvas, as sold ready for the painter, is employed. The somewhat greasy and repellent or waterproof surface requires first of all to be removed. This is effected by means of a warm solution of common carbonate of soda, applied with a piece of flannel. After well scouring with this solution until clean water flows freely over the surface, it is thoroughly well rinsed, and allowed to dry. The glazed surface of the prepared canvas will now have acquired a matt surface of slightly absorbent character. This is then treated with a weak warm solution of gelatine, containing from ten to twenty grains to an ounce of water, applied with a sponge, and suffered to dry. The canvas prepared in this way may be kept ready for use.

The collodion enlargement, having been fixed, toned, and washed, is now placed on a levelling-stand, and a strong solution of citric acid in water—the exact strength is unimportant, say thirty grains to an ounce—is poured over it, and allowed to remain a few minutes. The action of the citric acid is two-fold: it restores the toughness of the film, which has become somewhat powdery in character from the action of the mercurial solution; and it loosens the film from the glass. After a few minutes the citric acid solution is poured off the plate, and preserved for subsequent use. The film is now very thoroughly washed under a tap for five or ten minutes, during which time it will have become completely loosened from the glass, upon which it will readily slide about. Should it not become loose during the washing, it must be again treated with the citric acid solution, and again washed. If a tardiness to loosen be noticed, the edge of the film may be lifted, and a gentle stream of water suffered to run underneath.

A sheet of tracing-paper the size of the plate is now taken and placed upon the film. If two persons can be engaged in the operation, some little trouble in subsequent operations will be saved, if the tracing-paper is first wet and suffered to expand; each person then taking hold of two corners, the tracing-paper is gently laid upon the film. If one person only is engaged in the operation, the tracing-paper is more easily managed dry in the first instance, as there is less difficulty in handling it so as to get it down flat on the film when a large plate is used. One edge of the collodion film is then turned over the tracing-paper, and the whole, paper and film adhering, lifted by a sliding motion off the glass, and placed, film down, on the prepared canvas. It is then covered with blotting-paper, and thoroughly well rubbed down; the tracing-paper—which has simply served as an aid to lifting the film, and, by its transparency, permitted the position of the image to be seen in placing it on the canvas—is then lifted away, and the transferred film left to dry.

When dry, this film adheres so perfectly to the prepared canvas that it cannot even be scraped away without injuring the surface of the canvas. It cannot be removed without scouring with hot water or a hot solution of soda.

The head and such other portions of the figure as may be desirable can be thus transferred to the canvas, and such other portions as may be required can easily be painted in by the artist.

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PORTRAITURE BY GAS LIGHT.

The advance of summer naturally quenches much of the interest in the subject of portraiture by artificial light which has prevailed amongst photographers during the last few months. But it may be as well, as the subject has recently excited attention, to put on record a few more facts and observations on the subject. By far the most important step, in our estimation, which has been taken in this direction is the application by Mr. Laws, of Newcastle-on-Tyne, of ordinary gas light for producing portraits. So important did we regard the matter, that we visited Newcastle for the express purpose of seeing the light and examining Mr. Law's arrangements for employing it, in order to give our readers the benefit of full information on the subject.

There is an odd tendency amongst mankind frequently to seek for a remote and complicated agency to effect that which might easily be achieved by a simple and familiar appliance. Photographers have, for many years, tried various unfamiliar, and some troublesome, sources of artificial light for use in their art, whilst common gas, always at hand, easily applied, not costly, has been totally overlooked. To Mr. Laws occurred the happy inspiration, on witnessing the trials of some superior gas burners, to try their availability in photography, the result being marvellously successful. He now has established in his studio, as a portion of his regular appliances, one of Wigham's large gas burners, by the aid of which he is enabled to produce excellent portraits, independent of sunlight, in fifteen seconds, practically little more time than is required in ordinary daylight for similar work. At first sight it would seem that ordinary gas, with its comparatively dull non-actinic flame, was peculiarly ill-suited for photographic purposes; but it must be borne in mind that by the aid of the burner employed there is not only a much greater body of flame, but a much higher quality of light obtained. The quality of the gas is not, as might be naturally supposed, modified by naphthalizing, or charging it with additional carbon, but the flame is rendered more intense by means of more perfect combustion. The burner employed by Mr. Laws consists of sixty-eight jets, or fish-tail burners. These jets are packed together as close as possible, side by side. They are contained in the base of a hollow truncated cone, resembling, in size and proportions, the lower half of a sugar loaf; the diameter of the bottom about eight inches, of the top about six inches. All the jets being simultaneously lighted form a large intense conical flame; suspended about ten inches above the burner is a tube or chimney of talc about six inches in diameter, towards which the flame is drawn, and within which apparently all the products of combustion are absolutely burnt, adding considerably to the intensity of

the light. The theory upon which the intensity of the light obtained is based will perhaps be best explained by an extract from a paper read by Mr. Wigham before the British Association at Dublin, where he described the application of gas to lighthouse illumination. He says:—

"It occurred to me that if any plan could be devised by which the excess of carbon—the smoke—existing in rich gas flames could be turned to account as a means of increasing their illuminating power, a valuable desideratum would be obtained. I accordingly made many experiments with that object, and came to the conclusion that I could find no better basis for my efforts to that end than the ordinary well known fish-tail jet. The fish-tail jet, it is hardly necessary to say, is bored diagonally on opposite sides of a small internal cone. The streams of gas issuing from the orifices impinge against each other with considerable force, and the result is the thin sheet of flame with which we are so familiar. This flame possessing a large surface, to which the oxygen of the air readily gains access, is in consequence rendered brilliant and comparatively smokeless. But on closely examining the flame of a fish-tail burner it will be seen that towards the top, where the force of the stream of gas is nearly expended, it is thicker and inclined to be smoky. The larger the bore of the burner the thicker the stream of gas, and (its pressure and quality being good) the greater the amount of unconsumed carbon. When a number of fish-tails are arranged so that the upper extremities of their flames touch each other, they run up (because of the absence of air between each jet) into very smoky tails; but the light they give when thus united is increased (with hardly any increased consumption of gas) much beyond the mere multiple of their single flames, as may be seen in a moment by bringing two fish-tails together. I made this peculiarity of the fish-tail available for producing a large flame of highly illuminating power, and I devised this form of burner. I used in its construction double jets, by which a more effective combustion of gas is attained with less consumption for each jet than in the burners which I used in my earlier experiments. The principle of the double jet is not new, but I believe that the present form of its application is entirely so. It is exceedingly simple, and may be explained by this ordinary gas burner.

"It will be seen that the power of this burner is obtained not only by the peculiar arrangement of numerous fish-tail jets, but by suspending over the flame which they unitedly produce an oxidiser of talc or other material by means of which a current of air is brought in contact with its most smoky part, rendering it not only smokeless, but exceedingly white. The combustion is also assisted by a bottom cone for equalising the current of air to the flame. The oxygen of the air is thus twice availed of, first, at the bottom of the flame, through the medium of the several fish-tail burners; and secondly, at the top of it, where its action raises to a white heat the large quantity of solid carbon found there. This may be seen if I light this burner, which is one of the ordinary clear-weather lighthouse burners, and show it to you without, and with, its oxidiser. I may say, in passing, that burners like this are superior to any form of argand burner in this important particular, that they require no chimney glasses, the breaking and cleansing of which often cause much inconvenience in lighthouse maintenance, to say nothing of their presenting an obstruction to the passage of the light of the flame to the dioptric apparatus."

Mr. Law's burner is fixed on a standard about five feet high, the sitter being placed about six or eight feet distant. Of course reflectors play an important part in utilizing gas light for purposes of portraiture, and Mr. Law has adapted very simple but efficient reflectors. Over the light itself, Mr. Law uses a concave reflector such as he found already existing in commerce. It is like a large saucer (twenty-seven inches diameter) lined with strips of silvered glass. A hole in the centre allows it to hang over the chimney, adjusted at a suitable angle for throwing the light on the sitter. This practi-

cally gives the top light. A smaller one of eleven inches diameter is placed so as to give side light, and a similar one, a little more in front, lights the front of the face sufficiently. An ordinary swing dressing glass is found sufficient for giving reflected light on the shadowed side of the face. The reflectors referred to, cost, we learn from Mr. Law, something under thirty shillings. Whilst we are referring to the question of cost, we may mention that details on such subjects may be learnt from Edmondson and Co., 19, Great George Street, Westminster, who erected those now to be seen on Westminster Bridge.

As the full combustion is only necessary during the actual exposure, the cost of gas is reduced to the fraction of a penny. The portraits produced by Mr. Laws are for the most part very excellent. Some were a little heavy in the shadows, but many were indistinguishable from ordinary daylight pictures.

There is ample room, we think, for experiment with gas improved by some of the methods which have been proposed for securing a whiter and intenser flame without increasing its volume. In the Royal Observatory at Greenwich a gas-flame reflected by a mirror which reflects the deflections of a needle, indicating the variations of the magnetic currents, provides a photographic record of the magnetic variations during every twenty-four hours; and in this case, if our memory serve us aright, the flame is derived from naphthalized gas, which gives a sufficiently actinic flame to produce the record. This is a point upon which the President of the Photographic Society of Great Britain can give some information.

Mr. Wm. Brooks, of Reigate, an ardent experimentalist and exceedingly skilful practical photographer, has produced some good photographs of dark caves by the aid of paraffin lamps only. Possibly increase of number of lamps or excellence of burners might render paraffin sufficiently powerful for portraiture. The introduction of the rapid gelatine plates, peculiarly sensitive to those rays which have been usually regarded as almost entirely non-actinic, has introduced new possibilities into the art, of which photographers will not be slow to avail themselves.

FRENCH CORRESPONDENCE.

THE REAL STATE OF THE QUESTION OF THE REPRODUCTION OF NATURAL COLOURS BY MEANS OF PHOTOGRAPHY.

As I am still absent from Paris, and am living at my family residence in the neighbourhood of Marseilles, it is scarcely possible for me to find the materials for an interesting letter on photographic subjects. Even if I were in Paris, I should experience some difficulty in bringing anything novel or important to the notice of the readers of the PHOTOGRAPHIC NEWS, so few and trivial have been the occurrences in our photographic world during the past fortnight. I may, therefore, be permitted to give the present letter rather the character of a discourse on some of those principles and incidents of our art with which I am more familiar.

Occupying, as I do, my leisure by reading the various photographic journals that are sent to me from all parts of the world, I have had occasion to observe that the question of the reproduction of natural colours by means of photography is one which is generally not sufficiently understood. With regard to the important and interesting researches of M. Ch. Cros and of M. Ducos du Hauron, I have many times seen the expression, "Reproduction of natural colours." Now, this title, as it seems to me, cannot with any truth be applied to the investigations of which I am speaking, though it is far from my intention to criticise them or to depreciate their value. All that I am anxious for is that the real state of the case may be accurately comprehended, and I therefore take it on myself to explain how it is that these processes, in which the public is apt to believe that there will be found a means of taking natural colours, are in

reality nothing but highly artificial methods of producing polychromatic pictures by means of photography, and that there is no pretence for supposing that a coloured facsimile of the original can be obtained with any high degree of certainty and exactness.

Every fascinating theory has the effect of carrying away the minds of those who do not give themselves the trouble of examining it fundamentally, and I have myself observed distinguished savants to be so enraptured with M. Cros' views as to believe that they contain the solution of the problem of the reproduction of natural colours by photography. If I am not mistaken, this is the opinion of the learned M. Radau himself, who has put it on record, in his recently published and excellent work entitled, "Photography and its Scientific Applications." In a number of articles which I have studied, their authors come to the same conclusion, one which, in my opinion, is formed under the influence of an illusion sprung from the very natural wish to obtain the solution of this cardinal problem of photographic science. Already, on many occasions, I have had no hesitation in expressing this opinion—a perfectly loyal and disinterested one—for, so far as I myself am concerned, I have never had the least pretention of obtaining natural colours. Being, therefore, myself completely outside the dispute, I retain the perfect liberty of judging impartially, and that is why I make use of it.

What strikes me at once, on examining more closely the theory of the above-mentioned investigation of this subject, is the principle which they assume that by means of red, yellow, and blue, we can obtain all the other colours of the solar spectrum. It is a fact that violet, green, indigo, and orange can be obtained from these three primary colours, and hence the conclusion that all the colours of nature can be obtained from the red, the yellow, and the blue. But, in my humble opinion, this conclusion is an erroneous one; for there are in nature a multitude of tints *sui generis* which are not the resultants of a forced combination of the colours of the solar spectrum. There are, moreover, black and white, which are not found at all in the spectrum, besides the metallic effects which are not represented in the light of the sun.

What I have thus stated is incontestable; it is not a question of theory, but of facts whose evidence cannot be denied. What becomes, then, of the theory of the complementary colours in the application of colours to photography? It reduces itself to this: the possibility of obtaining by means of three negatives with red, yellow, and blue, a polychromatic reproduction of an object coloured by nature, whose colouration would be the absolute resultant of the single combination with each other of the seven colours of the solar spectrum. Besides, this reproduction, to be quite true and artistic, would involve the necessity of employing a fourth negative, giving the colouring and modelling of the shadows which the three above mentioned colours are unable to realise alone. Evidently the three negatives obtained by filtering the light through violet, green, and orange glasses or media, even supposing that the selection of the red, yellow, and blue rays has been effected with mathematical accuracy, can only give a picture modelled, indeed, throughout, but, owing either to free colour, or to the different proportions of the three colours employed, wanting in an essential particular—the colour of the shadow; this is a species of grey depending neither on the red, nor the yellow, nor the blue. Black will be approximately rendered in those parts where the superposition of three colours of an intense quality will give a very sombre hue; but if we lower gradually each of the colours which form this sombre hue so as to approach nearer and nearer to a colour which becomes clearer and clearer, we shall not arrive at the result of obtaining first the pure tint of the shaded object, nor afterwards the grey which expresses exactly the hue of the shadow. From this point of view I have carefully examined the most successful prints of M. Ducos du

Hauron, and I have failed in finding the peculiar tint of shadow.

There can be no doubt that I have avoided mentioning a host of minor difficulties, such as the requirement of producing three negatives, of which one is taken by light that has passed through an orange medium; or, again, the impossibility of finding three pigments which in a state of powder shall be the equivalents of the red, the yellow, and the blue of the light of the sun; in this respect tinctures would be preferable to powders, for the rays of the spectrum are combined in penetrating matter in a liquid state, and are not superposed in distinct layers. It is true that the luminous rays passing through blue and yellow media placed over one another produce green, whereas projected separately on a screen, and then caused to combine in one projection on the same screen, they produce white. The question, it will be seen, is an exceedingly complicated one, but it is necessary from theory to derive a practice which, though it may not be capable of adoption on a large scale, shall at least satisfy the conditions of the reproduction of natural colours.

The most that can be said with strict regard to the truth of the processes proposed to us is, that by means of them we can succeed in obtaining polychromatic photographs, which, though they cannot be compared to the original object as regards colour, produce, at any rate, an harmonious effect and one agreeable to the eye—just like those chromo-lithographs printed with three colours only, which, considering the small number of colours employed, are very pleasing to look at. To complete the photographic process of the three negatives, it would be necessary to make it still more complicated: in the first place, a fourth negative would have to be added in order to render the relative values of the hues of nature, and to give modelling and colour to the shadows; and in the second place, it would be requisite to produce, by artificial means, either all the other tints which the three primary colours combined among themselves could not furnish, or those metallic hues which cannot be obtained from red, yellow, and blue. Thus it will be seen there is still much remaining to be done to perfect the process, and that, too, with the further condition that the difficulties of working, which are already so great, must on no account be increased; even then a method of printing so mechanical as this is hardly deserves the name of natural. Nothing, in my opinion, is less natural, and for this reason the working of such a process commercially can never be a success except for fancy pictures; it will never be employed for the accurate reproduction either of works of art, or of scientific originals. Before giving way to a desire to enter on any particular road, we ought to be quite certain whither it will lead us. Now, in the case before us, we do not see how the subject treated in the way that has been indicated can possibly bring us to the desired result. MM. Cros and Ducos du Hauron are no doubt persevering, as it behoves all investigators to be, and there cannot be the slightest doubt but that they are working in perfect good faith; they have been pursuing the same path now for a very long time; but what the state of the question was eight or nine years ago the same it is to-day. The improvements in the details have in no way modified the error in principle. Greater delicacy in the prints, methods for obtaining the negatives more rapidly, better separation of the distinctly coloured rays, are all so many steps in advance which may have a useful application for another purpose, but they will not lead us to the end we have now in view. So long as the arrangements at the point of departure remain defective, the results obtained at the goal can never be true. To anyone who, in inquiring about these processes, shall use the words, "Natural colours!" we must reply, with all the strength of conviction, No! and a thousand times, No! The reproduction of colours as they are in nature is the prize in a competition still open to all the world, and blessed will be he who shall make the wonderful discovery.

LEON VIDAL.

DRY PLATE EXPERIENCE. THE PLATINUM PROCESS. PAPIER ARTIGUES, ETC.

BY CAPTAIN WATERHOUSE.

[We select the following interesting experiences from a letter just received from Captain Waterhouse.]

Of photographic news I am afraid I have but little to give you.

I noticed that the writer of "Photography In and Out of the Studio" a few weeks back expressed a wish that I would give the results of my experience with dry plates. I have not worked very much with them except when preparing for the transit of Venus. The process I like best and have found most sure in working is the coffee process as given by Mr. Whitehouse in the YEAR-BOOK for 1877, and I am just now about to prepare some plates for use in Afghanistan by it. I have taken such plates with me from Calcutta to Singapore and back, and to Darjeeling, and have found them to do well. I have lately tried developing coffee plates with ferrous oxalate developer, and found it answer well, though it seemed to require longer exposure than alkaline pyro. Further trial is, however, requisite before I can speak confidently on this point. It is only now and then that I can get out to try a plate. Emulsion plates would do well here too, though I have not had time to work that branch out. I have obtained very good results by a modification of Canon Beechey's process, using coffee or tincture of anatto as preservative. Beer and pyro did not answer so well in my hands.

I have been working Willis' platinum printing process, and am much pleased with it. The keeping powers of the sensitized paper, the rapidity of the exposure and development, and the extreme cleanliness and simplicity of the manipulations, make it most useful in an office working short and limited hours, besides its other intrinsic advantages.

I see in the News for April 4th, just received, a notice of some "Papier Artigues" for copying drawings, plans, &c." Some of your readers may be interested in knowing that a very fair substitute for this paper may be made by brushing over Rives paper with a thickish mixture of glue and Indian ink, so as to leave a thin and not too highly coloured coating.

It is sensitized by floating, back downwards, on a solution of bichromate of potash, and, after exposure to light, washed off in cold water. I find it very useful for producing copies of maps when only a few copies are required. It is, however, only suitable for the same class of subjects as photo-zincography—i.e., those drawn in clear black lines, and not shaded. Glue works better than gum or albumen, and is quite sufficiently soluble in cold water. Mouth glue is very good. Gelatine is good also, but requires hot water in washing off.

Some years ago Mr. Swan prepared for me some paper for the same purpose, which answered very well, though I did not follow up the process then. The paper could no doubt be very easily prepared in large quantities by the Autotype Company or other makers of pigment tissue. The paper should be hard, and unabsorbent. Rive paper seems to give the cleanest results.

While on this subject, I may mention that trials of Mr. Pellet's cyanifer paper, prepared according to his formula with oxalic acid and perchloride of iron, and developed in a solution of yellow prussiate of potash, which is said to produce prints exactly similar to the original—i.e., prints with dark lines on a clear ground, from an ordinary pen-and-ink drawing—gave me exactly opposite results, and it was only by developing with the red prussiate that I obtained the stated results; but with this developer there was such a tendency to reversed action that the process seemed to be of little practical use as it stood, and I had not time, nor was it worth my while, working out modifications. If any of your readers have tried the method, I shall be glad to know their experience.

OFFICIAL REPORT OF PHOTOGRAPHY AT THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1878.

SECTION I. PROFESSIONAL.—SECTION II. AMATEUR.
JUDGES:—Messrs. T. Hart, Chairman; W. N. Carne.

THE Judges have great pleasure in bearing testimony to the great advance made in their department during the past twelve months, and to the exceedingly high character of many of the exhibits. The rules of art in form, composition, light and shade, &c., seem to have been studied to good purpose by some of the photographers, and the consequence is that in many of their works there is a marvellous perfection which ministers to our noblest gratification. The Judges hail with pleasure all those who are trying to lift photography out of the mechanical abyss, where it has too long remained, into a higher and purer sphere, and feel that they recognize, with their brothers of the brush, that the essence of the art is spiritual.

Section I.—PROFESSIONAL PHOTOGRAPHY.

1. For the best landscape, size not less than 14 inches by 11 inches, a first silver medal has been awarded to E. Forhead, Ventnor, for his fine view of "Old Church, Bonehureh," No. 604.

2. For the best landscape, size not less 11 inches by 9 inches, a first bronze medal to Marsh Bros., Henley-on-Thames, for their view in Quarry Wood, near Great Marlow, No. 619.

3. For the best landscape by the collodion emulsion process, size not less than 9 inches by 7 inches, first silver medal to W. England, for his splendid Swiss view, No. 666. Mr. England exhibits fifteen gems (views in Switzerland), all in his well-known style, possessing the highest artistic excellence—full of atmosphere—broad, yet exquisite in detail.

4. For the best interior by any process, size not less than 11 inches by 9 inches, a first silver medal to A. J. W. Penn, India, for his fine Indian Interior, No. 684.

5. For the best portrait taken direct, size not less than 14 inches by 11 inches, a first silver medal to W. M. Harrison, Falmouth, for his fine study, "Portrait of a Boy" (untouched), No. 638. This is more like a photograph from an "Old Master" than a study from life. It is full of artistic feeling, soft in outline where it ought to be, and the lines just strong enough where required, and all subservient to the face. It is a photographic triumph, reminding one of the "studies" seen in Rome and Florence.

6. For the best portrait, size not less than 10 inches by 8 inches, a first bronze medal to Robert Slingsby, for his Portrait of a Lady, No. 650. This is a very fine study beautifully modelled, well lighted, and very soft; one of the finest portraits in the collection from an artistic point of view.

7. For the best group, composition or otherwise, size not less than 14 inches by 11 inches, a first silver medal to Messrs. Chaffin and Sons, for their group "Cheekmated," No. 614. This is a very fine composition, though the high lights in the faces are rather too strong. This remark applies particularly to No. 611, "The Musicians" (they seem under-exposed), and No. 612, "Popping the Question" (the heads are out of focus); but the Messrs. Chaffin are working and striving in the right direction, and, with a little more well-directed perseverance, we believe, will attain to the highest excellence. We hope to see their works again next year.

8. For the best enlargement, landscape (in carbon), size not less than 20 inches by 16 inches, a first silver medal to W. M. Harrison, for his enlargement (untouched) No. 637. This is a view at Seaton, Devon, and is very fine in detail.

9. A first silver medal (special) is awarded to W. Brooks, Reigate, for his truly wonderful photographs of Caves, &c., taken sixty feet underground. The difficulties in a

ease of this kind must be immense, as they are taken by artificial light. Mr. Brooks had to deal with yellow rays, as well as with the darkness of the caves. By whatever process he did them, we consider the specimens sent triumphs of the photographic art; they have all the characteristics of photographs taken in open daylight, beautiful in detail, &c. The discovery is capable of being applied in various ways, and, in a mining country like Cornwall, it may be invaluable, as it shows that our deepest mines can now be photographed successfully. What next?

10. A special first bronze medal is awarded to Robert Faulkner and Co., for their powerful enlargement, "Dorothy Morrison," No. 585. This is wonderfully delicate in detail, fine colour, and altogether a very artistic production. Messrs. Faulkner and Co. exhibit several others equally good.

11. A first silver medal is awarded to David Hedges, for his Studies of Animals from Life, No. 596. These are in the artist's best style, and unapproached.

Reuben Mitchell, of Bolton, sends some fine examples of dry-plate work, No. 582 being especially good.

Adam Diston's carbon enlargement, "The Broken Toe," is a well-composed interior. No. 609, "Henry Kirk White in his Study," wants focus; the objects behind are too sharp; but Mr. Diston is working in the right direction, and we expect some fine specimens of photography from him. We hope to see his work here again.

Felix Bonfils sends several fine photographs from Egypt, &c., No. 634 being extremely good.

H. Garrett Coeking sends several splendid studies in his well-known style, No. 657, "Gitana," being remarkably good.

Messrs. Geo. F. Dew, J. Milman Brown, T. Nesbitt, and the Cleveland Photographic Company, send specimens of good and earnest work.

Messrs. W. H. Oakley and Co. send "Photographic Appliances," with many improvements in apparatus, &c.

AMATEURS.

The amateur department is also very well represented, and has several workers "running hard" many professionals. Charles A. Fernley, for instance, exhibits "Six Sketches near Reigate," which are photographic gems; but we cannot understand how Mr. Fernley, with his artistic feeling, could leave his skies so white; a little eloud here and there would make them perfect. A first bronze medal is awarded to his No. 707.

T. M. Brownrigg has a first bronze medal for his "On the Blackwater," No. 703.

Harry A. H. Daniel is awarded a first bronze medal for his "Cottage, Lynmouth," No. 717. He exhibits a good collection of photographs by the wet collodion process; some are exquisite in detail.

Other exhibitors sending good works are, Louis W. England, Henry N. White, Edward Brightman, J. Dudley Radcliff.

A first silver medal is awarded to H. N. White, Isle of Wight, for his splendid series of photo-ceramics. These would do credit to any professional photographer. Mr. White must have an intense love for the art, or he could not produce such work.

ON THE PREPARATION OF THE PAPERS EMPLOYED IN CARBON PHOTOGRAPHY.

BY ADOLPHE OTT.*

Formerly Chemist in the Establishment of Braun & Co., Dornach, Upper Elsass.

UNDER carbon photography is understood the photographic printing processes depending on the property of coloured gelatine, when mixed with a salt of chromic acid, and then dried, to become insoluble after being exposed to light. A sheet of suitable paper is coated with a thin film

of coloured gelatine (generally also mixed with other soluble substances); this is then sensitized in a solution of one of the chromates, and when thoroughly dried exposed under a negative. If the exposure be continued for a sufficiently long time, there is thus obtained a positive copy which only requires to be brought out or developed in order to obtain a picture corresponding completely with the negative, and possessing the great advantage that it does not fade like silver photographs, but is of unlimited durability, provided, of course, that, for tinting the paper, only permanent colouring materials—as Indian ink, indigo, madder lake, &c.—be used.

Now the developing process cannot be effected on the carbon paper itself, for however thin the gelatine film may be, it can only be rendered completely insoluble in those parts which are opposite to the perfectly transparent portions of the negative, and even there, with a comparatively short exposure, the insolubility cannot always be secured. Where, however, the negative image is quite opaque, or where there are half tones, the film will still be either entirely soluble in hot water, or will only become insoluble on its upper surface to a depth corresponding to the intensity of the half tones; the lower side of the film, which is in contact with the paper, remains completely soluble. If, therefore, it be attempted to develop the picture on the carbon paper itself, the whole film would directly detach itself from the paper, and float on the surface of the developing water; it would crumple up, and because of its exceeding tenuity, would, by tearing in pieces, baffle every attempt to stretch it on a support. Hence, before developing, it must be transferred to another paper; in this state the insoluble part of the film rests on the support, and the soluble part can with ease be washed away by hot water. As the whole operation started with a negative, the first positive on the carbon paper would be in the right condition, but on being transferred to the second paper it would again be inverted; in order, therefore, to set it right it must be transferred once more. We have therefore to investigate directions for the preparation of four kinds of paper—the carbon paper, the developing paper, the second transfer paper, and (in cases where an already inverted negative can be used where that as a second transfer is not necessary) the single transfer paper.

(1) *The carbon paper.*—For making this paper, various formulæ have been published* :—

	Nicholls.	Swan.
Gelatine ...	100	100
Sugar ...	50	50
Water ...	250	300 to 400.

When the paper is to be sensitized at the same time, three parts of a concentrated solution ammonium bichromate must be added to the above.

	Bollmann.	Fargier.	Vidal.
Gelatine ...	100	100	100
Glycerine ...	33	—	13
Water ...	666	1000	666
Colouring matter —†	—	12·5	4

These formulæ, as given in the books, are by no means satisfactory. For instance, the quality of the gelatine to be used is nowhere stated, and only in two cases the proportion of colouring matter and of the chromic salt given. Every one will also be struck with the difference—varying from 250 to 1,000—in the proportion of water, as well as in that of glycerine and sugar, varying from 0 to 50.

The question whether a carbon paper can be prepared with gelatine alone—without, that is, the addition of any sugar or glycerine—may be answered in the affirmative, provided that a soluble kind of gelatine is available, and that it is at once worked so soon as it is dry; otherwise the gelatine quickly becomes insoluble, and it is impossible to develop the image; an easily liquefied gelatine

conduces also to the manifestation of other defects. A gelatine containing no sugar will, according to Husnik,* grow hard two days after sensitizing, and can no longer be developed; the addition of sugar offers many more points of attack to the hot water, and permits it to penetrate with greater ease into the layer of gelatine.

At Dornach, where for some years past carbon paper has been manufactured on a large scale, we find that 25 per cent. of sugar with (in some cases) 5 per cent. of glycerine, perfectly sufficed to render the film soluble to the required extent; but in a climate such as ours, the addition of glycerine is not always necessary, for in general the film of glycerine retains its suppleness without it, and we, therefore, as a rule, rested satisfied with the 25 per cent. of sugar. In dry climates the presence of glycerine may be advisable, and, in that case, 5 per cent. of that substance, besides the sugar, will be enough. The quantity of water should be from 300 to 400 parts, as in the formula of Swan. For sensitizing, 5 parts of potassium bichromate will suffice. In respect to the colouring material, however, regard must be had to the pigment used, and to the purpose which the paper has to serve; the limits will be from 20 to 50 grammes of colour to 1 kilogramme of gelatine. Relying on an experience of many years we can, with confidence, recommend the following formula:—

Gelatine ...	100 parts
Sugar-candy ...	25 "
Glycerine (when necessary) ...	5 "
Potassium bichromate ...	5 "
(Dissolve in 50 parts water)	
Water ...	300 to 400 "
Colouring material ...	2 to 5 "

One of the most suitable kinds of paper is that manufactured by Romain Talbot, which is sold in rolls 80 centimetres wide and 200 metres long; the weight of such a roll is 16·25 kilogrammes. At the manufactory of Braun and Co., the carbon paper is made in rolls 4 metres long, the weight of such a roll, when finished, being 630 grammes, and its price 62 Pf. (nearly 6d.). As will be seen from the price, this is not a paper of very first-rate quality, as, indeed, it is not necessary it should be, for the picture does not remain on it, but is transferred. It is further required that this paper should be, to a certain extent, porous, in order that it may be easily penetrated by the water in developing, and that it may quickly separate; these conditions are completely fulfilled by Talbot's paper. For the so-called transparent positive papers, which are employed in enlargement photography, a finer kind of paper from the factory at Malmédyl is required.

As regards the kinds of gelatine to be used, those made by Nelson, Dale, and Co., 14, Dowgate Hill, London, and sold under the names of "Patent Opaque Gelatine," and "Patent Amber Gelatine," are certainly of excellent quality, but rather dear. We prefer the amber gelatine, on account of its lower price. Rouen gelatine is also a good sort, but that produced by Arnetre is of no use, because it causes the pigment to fade. Very soluble kinds like that made at Strassburg are also of no service, unless they be mixed with others. In the establishment of Braun and Co., at Dornach, Nelson's gelatines are exclusively used for transparent positive papers which are to be affixed directly to the glass; for other papers, where so great an adhesive quality is not required, a combination of one-third Strassburg and two-thirds Rouen gelatine is employed.

(To be continued.)

THE CHALLENGER PHOTOGRAPHS.

"It appears that we are still waiting," the *Daily News* remarks, "for the photographs brought home by the Challenger, which comprise, as our readers may imagine, one of the most valuable mementos of that expedition. Beyond the original cost of securing the valuable series of nega-

* Compare A. Martin, *Handbuch der Email-photographie und der Phototypie oder des Lichtdruckes*, p. 233, et seq.

† In this case sensitized with 13·3 parts of the bichromate.

‡ *Traité Pratique de Photographie au Charbon* (Paris, 1877), page 113.

* Husnik *Die Heliographie* (Vienna, 1878), page 141.

tives, produced in every quarter of the globe visited by Sir Wyville Thompson and his friends, a large Government grant has been made to defray the expense of publishing the pictures, which will illustrate more forcibly than any written description the three years' voyage of the Challenger. We only trust that when the prints are before the public they will give more satisfaction than was given by those of the last Polar expedition. As the burden of securing these pictures was entirely borne by the public, one might have thought there would be little difficulty in securing a set by paying the cost price of production. Not so; never were photographs more jealously taken care of by the Admiralty, and the utmost this department consented to do was to print half a hundred copies and distribute them among the principal institutions and libraries of the Kingdom, to be buried among dusty archives and forgotten Blue Books. Nor were the Polar Expedition photographs of a nature to last very long. Although Government might very well have availed itself of several methods whereby prints of a permanent character could have been secured, the authorities preferred to have impressions in silver, with the fading of which every one is familiar. What the value of these sets of Polar photographs will be in twenty or thirty years may be readily conceived by all who have studied the changes in the family album. We do not know what is being done with the Challenger photographs, but the length of time that has passed may be a sign of better management. In any case, as the negatives have been produced by public money, there should be no difficulty thrown in the way of those desiring to purchase copies of such pictures as may interest them. Among the Challenger series are pictures that will delight students in almost every branch of science, while to the geologist and botanist they will be particularly useful.

PHOTOGRAPHING ON WOOD.

BY T. C. HARRIS.*

AMONG the many published formulae for photographing on wood, nearly all are defective at one vital point; that is, the block becomes wet during the operation. In this respect engraver's box-wood is peculiar, and to wet a block is generally to spoil it. In preparation, the logs are sawn transversely into wheels about one inch thick, and planed down to type height. As the trees are of comparatively small diameters, it is often necessary to glue several pieces together to obtain a block of a given size. To salt and sensitize a block in the usual way wets it, of course, and the final toning and fixing gets it thoroughly soaked. The surface on which the engraver works is endwise the grain of the wood, the pores of the wood running straight through. Water quickly penetrates these pores, thereby causing the block to swell and warp, and, when subsequently dried, very often does not regain its former level condition, which is essential. The small pieces composing the whole often expand unequally, thereby tearing them apart at the joints. Besides this, the glue in the joints becomes softened, making it liable to break in the press. The mere sensitizing of the surface will often cause the block to warp so much that it is impossible to get good contact in the printing frame. Rinsed negatives are required also, which is another trouble.

There are two ways of printing on wood which give good results, and do not damage the block in the least. From a negative of the subject desired, make a clear, thin positive on glass, by the wet collodion process. The positive should be of the proper size, on clean glass, without substratum. Tone and fix as a transparency, and lay in a dish of water containing a small percentage of sulphuric acid, to loosen the film. The film will soon become so loose that it can be easily stripped from the glass and transferred to the block. To do this safely, lay on the film a piece of wet albumenized paper a little larger than the glass. Press out the bubbles

* *Practical Photographer.*

and surplus water carefully, then turn back one corner of the paper, and it will come off, bringing the film with it. Have the block smoothly whitened with Chinese white in gum-water, and the surface slightly damp. It is now easy to transfer the film to the wood and remove the paper, when the block must be allowed to dry spontaneously.

Another way to print on wood is by a sort of photo-lithograph process. Coat paper with a thin, uniform coat of gelatine in warm water. Dry, and float a short time on a weak solution of bichromate of potash in water. Dry again, and expose under a negative till all the details are visible. Now roll the entire surface of the print with a printer's roller charged with lithographic transfer ink thinned with spirits of turpentine. Now soak the paper in a dish of tepid or warm water until the ink can be removed by rubbing gently with a soft sponge. All the ink, except the lines composing the picture, can be removed, when the print should be laid face down on the whitened block, and subjected to a heavy pressure in a common letter-press. The paper can be easily removed by wetting the back.

Another application of photography as a help to the engraver was discovered by the writer. Procure hard rubber, in smooth, black, polished sheets of about one-eighth of an inch in thickness. These are to be cut to the proper size, cleaned and albumenized the same as glass for negatives. The rubber plate is covered with collodion, sensitized in the bath, exposed in the camera, and developed in the usual way of making a negative. In fact, the whole operation is exactly the same as in making a ferrotype, on rubber instead of an iron plate, and a ferrotype bath and collodion are well adapted to the rubber. When a clean, sharp image is obtained, it is fixed in cyanide and varnished with a thin, transparent varnish, and dried by a gentle heat. The plate is now ready for the engraver, who will have a fine smooth surface and a clean drawing to work on.

When engraved, the plate is mounted on a wood block, and made type-high, and is ready for the printer. The rubber is somewhat more difficult to engrave on than box-wood, but the surface is much finer, and makes a more durable printing block. Unless more than one cut is desired, it is unnecessary to have it electrotyped, as wood-cuts are, but the original can be used in the press along with type, and as many as seventy-five or one hundred thousand impressions taken from it before it shows wear.

Correspondence.

FIRES IN STUDIOS.

DEAR SIR,—I beg to enclose an extract from the report of an inquest held on a fire on a photographer's premises in Adelaide, in which you will see that a witness makes the statement that cuttings from silvered paper are liable to spontaneous combustion, giving the Editor of the PHOTOGRAPHIC NEWS as his authority for saying so. As I never before heard, though a constant reader of your paper, of any danger in keeping silvered cuttings, I can't help thinking it a random statement without any foundation. The matter is of importance to photographers here, as regards their insurance policies, the companies thinking photography a very hazardous business, and as a consequence charging high premiums. It unfortunately happens that there have been two or three photographers' fires here recently, the origin of which could not be traced.—I am, sir, &c., AN ADELAIDE AMATEUR.

PS.—I have kept silvered cuttings for years, and have a stock now.

Captain J. H. Biggs deposed that as an amateur he had made photography his study for some years. The clippings of photographic prints referred to in the enquiry were composed of albumenized paper, sensitized with nitrate of silver, sometimes fumed with ammonia, toned with chloride of gold, and fixed by immersion in a solution of hyposulphate of soda. Such clippings were liable to spontaneous combustion, according to the Editor of the PHOTOGRAPHIC NEWS. Could not say how long after the pack-

ing together of the clippings combustion would arise. Knew of no other chemicals used by photographers liable to spontaneous combustion. The only one he could think of was gun-cotton. He had mentioned to some photographers the fact of the clippings being liable to spontaneous combustion.

By the Foreman.—Considered the heat of the weather would accelerate the action of most chemicals. Did not understand the chemical action by which fire was produced—whether by damp or heat. Should think half a pound of the clippings would be sufficient to create the combustion.

[We have no reason to believe that the danger referred to exists. The question was referred to in the News some years ago, when it was alleged by a correspondent that unfixed clippings of silvered and fumed paper might be a source of danger. But certainly no such danger is to be feared from clippings of fixed prints. We have never known a case of spontaneous combustion of pyroxyline.—Ed.]

COMFORT IN LANDSCAPE PHOTOGRAPHY.

SIR,—I have been dabbling in landscape photography for about ten years, but never, till quite lately, succeeded in getting all my arrangement entirely satisfactory. It may interest your amateur readers (or indeed professional) to know my way of conducting operations. First, as to the process. Commercial dry plates, and an automatic changing box holding one dozen plates. No dark-room; for the development is conducted at night, over the kitchen sink, by the light of a non-actinic lantern. So far, perhaps, many others work in the same way. But now for my second point.

My second point is my very superior means of transport. Suppose I want to take some views about fifteen miles off. Well, there is no hurry over breakfast. I just take my folding camera ($7\frac{1}{2}$ by $4\frac{1}{2}$), changing box full of plates, two or three lenses, and focussing cloth, and pack them in an old Stillman's developing box. This, weighing, when packed, under twenty-five pounds, is strapped on behind my carriage, the camera-legs in front, and the fifteen miles are covered, fairly easily, in two hours. No horse is required, for the carriage is one which has not been very long before the public, viz., the "Salvo-Quadricycle," made by some firm at Coventry. Anyone can ride them after five minutes' practice; and though the work is tiring at first, yet before I had had mine a month I did twelve miles in seventy-two minutes, on good roads. The prime cost is not too small, but one soon recoups one's self by total abstinence from medicine at 42s. a dozen, and by rapid improvement of general health. Altogether, though I do not generally point myself out as an example, yet in this matter I think I may.—Yours faithfully,

CONTEN.

Talk in the Studio.

ALLEGED ROBBERY.—In giving the details of an alleged robbery by a photographer, we are requested by Mr. Henry C. Turner of 299, Euston Road, to state that the charge has no reference to him notwithstanding the similarity of name. At Marylebone, Henry Turner, 24, photographer, of 11, Tyndall's-buildings, Gray's-inn-road, was charged with loitering at the rear of 33, Euston Road, at 1 o'clock on the morning of the 25th ult., supposed for the purpose of committing a felony. He was further charged with breaking and entering the workshop at the house on the 26th of April last, and stealing therefrom various articles value £5, the property of Frederick Cole, photographer. The evidence showed that the prisoner had formerly been in the prosecutor's employment, but left it in August last. He knew the premises well, and on the evening of the 26th of April the prosecutor locked up the premises safely, and on the following morning they were found to have been broken into and a number of things were missing from a table drawer which had been forced open and from the studio. An entrance had been obtained by the back door, which had been broken open. The police were communicated with, but nothing could be learnt of the thief or thieves. On the morning of the 25 ult., about one o'clock, a police-constable of the S Division found the prisoner crouched up on the top of the dust-hole on the back of the premises. He was asked what he was doing

there, but he made no reply and pretended to be drunk. He was taken into the Euston Road, and on being told that he was going to be taken to the police-station he became violent, and assistance had to be obtained before he could be got there. A key was found in his possession which was identified by the prosecutor as having been stolen on the night of the 26th of April. Detective Moody, of the S Division, searched the prisoner in his cell, when he then handed him some pawnbroker's duplicates. These related to articles that had been stolen on the 26th of April. Two other charges were also entered against the prisoner of breaking into and entering the shop on the 7th of May and again on the 18th of the same month and stealing a number of articles. The prisoner had nothing to say in his defence. Mr. Cook committed him for trial on all the charges.

To Correspondents.

J. A. B.—To work the method of finishing pictures in crayons introduced by Mr. Vanderweyde a few years ago, satisfactorily, personal instructions are desirable. Those who purchased the right to work the process were supposed to receive personal instructions as well. The proper crayons were also supplied to licensees. We cannot tell you with any certainty what crayons are used: we should think that ordinary soft crayons mixed with pumice stone powder would answer. The colour would depend on the tone of the picture: black, indian red, and brown umber would, we should think, serve. The pumice powder and crayon powder are mixed, and applied with a circular movement to the surface of the print with the ball of the finger. Probably Mr. Vanderweyde could give you more information if you communicate with him.

VENATOR.—We believe it is the custom, with the majority of high-class physicians, to give advice on moderate terms to those who cannot afford high fees, at certain times, very commonly to those applying personally before 10 a.m. One of the ablest oculists we know is Mr. Mackinlay, of 18, Stratford Place, Oxford Street. We are uncertain as to whether he gives advice in the way we have mentioned or not. That can only be ascertained by enquiry.

JOHN TERRAS.—The packet has not yet reached our hands. We will report on examining the prints. We know nothing of the lens you mention, save what we have seen in advertisements in the American journals; and we should take the claims there made with several grains of salt.

H. WILSON.—The printed slip, &c., were duly returned before we received your letter, and you doubtless have received it. We delayed in order to send on the other information for which we had applied.

H. BUTTERWORTH asks what is the difference in the finished result—that is, in the sensitive plate—between a bath plate and an emulsion plate. Theoretically they should be very much alike. The first is coated with collodion containing an iodide and a bromide. This is immersed in an aqueous solution of nitrate of silver, when, owing to the affinities which exist, a process of double decomposition takes place, which results in the formation in the collodion film of bromide and iodide of silver. In the emulsion plate the silver salts are formed in the emulsion itself, and, being insoluble but in a fine state of subdivision, they remain in suspension. There are some other practical differences. Bromide alone, for instance, is found best in emulsions, and the other products of the double decomposition—such as nitrate of ammonia, &c., which in the bath plate remain, are washed from the emulsions. We have no doubt that emulsions will finally become universal for dry plate work, and it is probable that rapid dry plates will become very general for portraiture and studio work.

B. D. F.—You have used a strong toning bath, and used it too soon after mixing. There is no remedy for the bleached effect of which you complain when once the effect is produced.

UNFORTUNATE.—We cannot with any certainty tell you what is the best treatment for the solution, as we do not know the nature of the contamination. It is possible that making it alkaline with carbonate of soda, and long continued sunning may restore it; or, possibly, boiling will prove the simplest method. Failing this, throwing down with zinc will be best.

OLIVER PIER.—We have no doubt that the portraits in "Men of Mark" are copyright. It is not necessary to inscribe the word "copyright" on a picture, as all pictures are presumed to be copyright. We cannot tell you whether they are, or are not, registered; but being part of a book, they would come under the law of literary copyright.

CYMBRO.—We are always sorry to hear of such cases as that our correspondent mentions. But we regret that we have no means of aiding them. See an article we wrote on the subject some weeks ago.

RANGEL AND CO.—Received. Thanks.

J. H. B.—See a letter on the subject, and our note in the present number.

The Photographic News, June 13, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

LA POSTE AERIENNE IN FRANCE—PHOTO-ENGRAVING PROCESSES IN PRACTICE.

La Poste Aérienne in France.—Bearing in mind the important services rendered by carrier-pigeons in establishing a "poste aérienne" during the siege of Paris, the French Government decided some time ago to foster the training of pigeons by its own officials, in case, at some future period, these winged messengers may be called upon once more to carry photographic film despatches into beleaguered towns. The leaving of a besieged city in a balloon, and thus conveying news to friends outside, is a comparatively easy matter; but it is a task of some difficulty to convey messages through the enemy's lines into the city itself. How France was able to communicate with its capital when this was so closely surrounded by German troops is a story with which we are all familiar. By the assistance of the photographer and the carrier-pigeon, a postal system was established with marked success, and if only the pigeons had been better trained, hardly a letter would have miscarried from the provinces to the capital. To ensure a more trusty race of messengers is now the aim of the French Government, for, so far as photography is concerned, this part of the work is discharged in the most perfect manner. Something more than 100,000 messages were despatched from Tours and elsewhere into Paris, and although the "poste aérienne" was a make-shift arrangement, started in a moment, without adequate appliances, nearly half, or 50,000 messages, reached their destination behind the fortifications of Paris. To effect this, however, the photographers had to work with a will, for only three or four per cent. of the pigeons actually reached Paris. The despatches had to be repeated over and over again, and on an average the same message was forwarded by forty pigeons. Since, however, the films were so fine that one single pigeon could well have carried the whole 100,000 messages in a tube affixed to his tail, the question of weight never entered into the calculation at all, and each pigeon, when it started, carried as many letters as is usually carried by a mail train. In some cases, it may be remembered, the pigeons were very quick in delivering their messages, and M. Dagron, to whom is due in the main the development of the system so far as photography is concerned, quoted one instance of this which is well worth repeating. He quitted Paris in a balloon with his apparatus, and narrowly escaped capture, having to place his cameras and appliances in wine casks to pass them through the enemy's lines, for the balloon had fallen within the zone of investment. He lost much of his material, among the rest his pyroxyline; this was of a special make, prepared by Poullena and Wittmann, of Paris, and eminently suited for the microscopic films he desired to produce. He could not obtain the same article at Bordeaux, where he was stationed, and consequently sent in an order for some to the Paris firm. His message left on the 18th January by carrier pigeon, and on the 24th of the same month (six days afterwards) the goods were lying at his disposal at Bordeaux, having been forwarded, according to instructions, by the first balloon. The pigeon in this instance required only a dozen hours to traverse the distance from Poitiers to Paris. But this was an exception to the rule. Most of the birds were not of proper breed, or, in other words, "homing" pigeons, for the so-called carrier is an impostor, and could not travel fifty miles to save his life. Any pigeons that could be obtained in Paris were sent out in the balloons in the hope that they would fly back again with the messages, and many were quite untrained. A pigeon, according to Mr. Tegetmeir,

a great authority, only flies by night, and as the balloons left Paris at night in the dark to prevent discovery by the Germans, the birds, if untrained, had little chance of finding their way back. The French Government now keep a quantity of "homing" pigeons in their chief fortified towns, twelve of the most important being chosen, not forgetting Paris. Officers and soldiers are selected by Government to train the pigeons, of which at this moment there are said to be no less than 6,000 in the French army. Means are also being taken to encourage the training of pigeons of burghers and citizens, and State prizes are to be instituted. It would be well if the photographer and photographic interest were as thoroughly cared for by the French Government, but we believe that the French Post Office disposed of all its balloons and photographic apparatus, which had stood the establishment in such good stead, as soon as the war came to a termination.

Photo-Engraving Processes in Practice.—Publishers and art-draftsmen are beginning to look with contempt upon "processes," by which they mean photographic methods of converting a sketch or drawing into a printing block; and, judging from results that meet the eye every day, they have much reason for their dislike. But there are processes and processes, and although the best of them cannot compete with wood-engraving, good impressions are to be secured, if the details of the method are carried out with skill and deliberation. The clogging of lines with ink, and the presence of minute specks or spots that give the picture an unclean aspect, are frequently the result of carelessness or hurry as much as anything else, and might be avoided if time were taken to free the metal or stone from such imperfections, supposing there were no means of preventing their formation. At the same time, photography cannot at present do what many people imagine. It is perfectly possible to secure either a phototype or surface-block from a printed engraving of almost any description; but it is not within the power of any "process" yet brought forward to convert the ordinary draughtsman's sketch into a block to be printed with type in a printer's press. And the reason of this, as we have before pointed out in these columns, is not far to seek. When a woodcut appears printed upon paper, it is in pure black and white; some of the lines may be very fine and very close together, but in all cases they are black, and there never is—or rather, never ought to be—anything grey about them. Such an impression as this would give little difficulty in reproducing by photography. But let anyone examine the drawing of a draughtsman's upon box-wood before it goes into the hands of a cutter, and he will at once see how difficult it would be to try to secure a photo-type from it, an intaglio that could be used in the printing press. By Woodbury-type the problem is to be solved; but then we must remember a transparent ink is used, and not one that is black whenever it touches paper. Again, by surface-printing, as in collotype, a block might be secured; but this is not to be worked in a printing press. The draughtsman's sketch, even if he has used a jet-black pencil, is not made up of jet-black lines. When he works with the fine point of his pencil, it is the case; but he has a habit of turning his tool upon the side and producing a broad grey line, which, if reproduced by the photographer as a broad black one—and he would have no other alternative by the processes in everyday-use—would at once spoil the composition. The wood-engraver, when he sees these broad grey lines, splits them, so that in printing one or two white intervals run the length of them, and lightening the mark considerably. But the photographer cannot interpret the draughtsman's work as the wood-cutter does, and hence he fails; perhaps, when we can better produce a grain by photographic or mechanical means, the camera will be able to do more in this branch of industry towards assisting the engraver.

ON THE FUTURE USEFULNESS OF PHOTOGRAPHIC SOCIETIES.

BY ARTHUR BRITTLEBANK.*

THE future usefulness of this Society cannot be otherwise than interesting to all members who are earnest in their endeavours to promote its well-being, who look upon photography as a scientific art, and not merely from a pounds, shillings, and pence point of view, though I fear there are many who attend the meetings merely as a pastime—to pick up "wrinkles," as they call it, and see if there is anything fresh that can be appropriated by themselves as a means of profit, without contributing in any measure to the general good themselves. This, I take it, is not the spirit that should animate our thoughts.

I, with many others, would like to see a broader and a nobler purpose, as it were, pervade our professional transactions, that should stimulate us to exertion, and, whilst affording individual pleasure, would also open up fresh trains of thought in others, and be of lasting benefit, not only to ourselves, but to our profession.

I have for some time thought that this Society is not known as it should be, that its workings and doings have not been sufficiently expanded or directed into the proper channel, and that it does not confer upon its members the full benefits which an organised society, constituted as this is, should have the power of bestowing.

As an illustration of this, note the entire absence of young men amongst us—I mean young men from sixteen to twenty-two years of age, this being the time of life when a man is most capable of receiving instruction and ardently enjoying the pursuit of knowledge, however difficult it may apparently appear. Then he is full of hope, and ambitious to excel in the profession or calling which he has chosen, and it might be naturally thought that class-institutions ought to be crowded with young aspirants to fame and zealous students in the field of knowledge.

I am, then, of opinion that we do not offer or hold out inducements sufficiently attractive and valuable in themselves to tempt our young professional brethren into this very often up-hill work, often involving great self-denial, mature study, and constant application. The papers that are read here are undoubtedly often of great interest and value to the profession generally, and bring to light much valuable information and induce research in many minds that would otherwise remain dormant. This is all very well for matured workers, but, at the same time, I think we ought to do something for the younger members of our profession, and this can be done in many ways.

There does not exist in this vast metropolis, the capital of the world, any recognised school in which a young man can obtain regular training in the higher or more advanced branches of this profession. There are hundreds of young men going through the daily routine of their work, who know next to nothing of the "why and wherefore" of what they are doing; and in many instances employers are unable, from want of knowledge themselves, to supply even elementary information.

This is a state of things for which it is very desirable we should find a remedy, and an incalculable boon would be conferred on the profession by the establishment, under the governance and direction of a properly-constituted committee, of regularly organised classes, which young men could attend and cultivate their tastes and talents in a satisfactory and profitable direction. I am sure we have men of intellect amongst us capable of directing the studies of young men, and I feel equally certain that they would be generous enough to give a portion of their time for the furtherance of such an important object; and when the nucleus of such a staff of voluntary teachers was once formed, others, of less aspiring natures in the first instance, would gladly enrol themselves for service in the good work.

Hearing papers read is, I fear, of little use to young men without the elementary groundwork is thoroughly secure.

There is too much of the mythical "royal road" to knowledge about them, and the knowledge is obtained too easily—that is, without study—and in many cases would be as easily forgotten. I am, therefore, decidedly of opinion that the only solid knowledge that will benefit a man is that obtained by close application and observation, together with continuous and properly-directed study.

I am now going to submit for your consideration the question as to the propriety of founding three classes of instruction—a chemical class, an optical class, and a general photographic art class, and I think that under these headings all professional culture can be easily classified. My desire is to see photography raised above that level where the mere manipulation of a lot of bottled solutions constitutes "the art."

Chemistry, optics, and general science are so intimately allied to photography that I think we shall be doing good work on a solid foundation in striving to promote a knowledge of these subjects. This is the kind of thing that will attract young men to our Society. Let there also be periodical examinations to test the proficiency that each member may have attained in all or any particular branch, let them be given certificates according to their merit, and their names be gazetted in our professional journals. Depend upon it there is nothing like competition to stimulate the mind and bring out the abilities, and I hope to see the time when young men will look with honest pride and pleasure on the prizes and certificates which their merits have gained them in these examinations. When this wished-for time shall arrive, the first question asked by an employer, when he is about to engage an assistant, will be—"Have you passed? and what is your grade?" This will assuredly bring intelligent men to the front, and they must claim precedence in all future business transactions, whatever the branch may be; it will also gradually raise the *morale* of the profession. Photographers will then be looked upon as men not only skilled in the craft they pursue, but as men of learning connected with the most fascinating sciences that can engage the attention of intellectual minds. Who can look back on such names as Brewster, Faraday, the Herschels, Tyndal, and a whole host of other honoured names of men who have done so much unselfish good for the benefit of mankind, and reduced chemistry to an exact science, capable of being demonstrated with mathematical precision and rule?

Who will affirm that a photographer should not have a intimate knowledge of all articles that come under his daily notice? And, further, would he not be a better man if he also possessed a knowledge of the atomic theory of the combinations of the different elements of nature, and of the combining proportions of these different elements to form new compounds? How is it that certain men have produced such wondrous changes in photographic manipulation? Simply because they have been able to bring to bear a whole storehouse of chemical knowledge to the subject in hand. We have all in our experience had more or less proof of the value of little things, and how giant results have been obtained in the field of science by men hemmed in, as it were, on all sides by hindering circumstances, strong only in their indomitable perseverance of manly courage; men who have conquered and won in spite of many trials, privations, and failures; men who have thought they could never do enough for others, yet have esteemed gratefully any little kindness done to themselves, and have produced from the very *refuse* of chemical works grand, glorious, and world-known results, as in the case of aniline dyes.

Then, with regard to optics: ought not a photographer, by virtue of his professional associations, to be thoroughly acquainted with every form and description of lens? Certainly; and also to be able to tell, straight off, the best form for any particular purpose, and not, as is now the case in too many instances, have to rely on the opinion or recommendation of the dealer. I am of opinion that there is as much much, and often more, paid for a name than there is for the article purchased; and this arises solely from the

* Read before the South London Photographic Society.

ignorance of even the elementary laws of optics in the purchaser.

The course of study I am advocating would soon tend to alter this condition of things, and a man would not then go to a maker, or possibly only a *seller*, blindly ignorant of what he was going to buy, and almost of what he required. He would know beforehand exactly what would suit him without asking any questions, and there would not be so much silly and vexatious discussion as to whether this or that maker's lens were quicker or slower than those of someone else. He would know that rapidity depended upon aperture and focal length, and be able to tell the why and the wherefore of everything with which he has to do in his professional capacity.

The study of optics is one of the most interesting and fascinating for the young photographer, ever yielding fresh beauties, and leading him by easy gradation to master all studies of a kindred nature.

See what it has done for such shining lights as Kepler, the Herschels, Newton, and other illustrious astronomers, and what they have been enabled to achieve over the old system followed a thousand years ago. See how a profound knowledge of optics has enabled these men of giant intellect to tread, as it were, upon the boundless empire of space, and to map out in their order the countless stars, to chronicle their courses, regular or erratic, to know their times and seasons, and to be intimate with heavenly constellations not dreamt of before. These noble-minded pioneers have been the means of advancing some of the most sublime speculations that have ever engaged human thought—thoughts that will last the world's existence, and give impetus and direction to all future philosophers. Here, then, is a charming as well as a useful study; and I claim that what a knowledge of optics has done for astronomy it can also do for photography as an art but yet in its infancy, thus giving a boundless field for enterprise and research.

Now we come to "art" or artistic knowledge, and I see no reason why some of our photographic studies should not in themselves possess as much interest as the magnificent productions of the grand old masters, whose works are always cited as the perfection of artistic labour. Art can be put into a photograph on paper as well as into a painting on canvas; but a man must be an artist to do it, and have given art as a study a good share of attention, so that in some modern measure he may possess that animating spirit that stops at nothing short of perfection. His eye must be trained to graceful, beautiful lines; he must study the effect of light and shade, composition, and harmony. But none of this can be attained by merely reading or hearing papers read. The subject must be worked at, and young men should attend one of the many excellent schools of art established under Government inspection in the metropolis and most of the principal towns throughout the country, where they may receive the ground work of an art-education that cannot but be of immense benefit to them in after life, whether applied to the profession they are following, or in enabling them to examine with a critical eye any works of art that may come under their notice.

This, then, is but a brief outline of the future usefulness to which the energies of this Society might be legitimately and profitably extended, and I only regret that I am unable to do full justice to the subject. But I hope the question will be put to this meeting and see if something cannot be agreed upon and commenced at once in this direction; and if any of the propositions should be entertained, no one will be more pleased to lend a helping hand than myself.

ON THE FADING OF SILVER PHOTOGRAPHS.

BY F. A. WENDEROTH.*

THAT photographs will fade more or less, sooner or later, photographers as well as the public are by this time aware,

* *Philadelphia Photographer.*

but the thought to give up silver printing, with its facilities and unsurpassed beautiful results, is not much cherished either by professionals or by amateur; even if there was a new and better process offered, it would be accepted with reluctance, as we all know what time and labour it costs to master a new process. But has there anything new been offered that for general application is better than silver? One who reads the following remarks by the Editor of the *English Photographic News* would be inclined to think that there was. He says: "When permanent printing processes exist, it is amazing that another silver print is produced." Reading this, I wondered what he meant; certainly not the carbon processes, which (allowed that when carbon alone is used in the form of ivory or lampblack for colouring matter, one of the substances needed for their production is permanent), for general use is impracticable, as most of those who have tried it can testify to. A large part of the business of portrait galleries is touched-up work, either painted, indelible, or crayons. To use carbon prints for this kind of work is out of the question, as its surface, being either collodion or non-absorbing gelatine, is even a great deal worse than albumen, and water colours applied to it when mixed with gum will crack off as soon as dry; or, without gum, will rub off by slight touch. It is even worse than to paint on glass with water colours; and how to finish with crayons is an enigma to me.

Mr. Willis, Jr.'s, platinotype process is too little known yet to determine about its adaptability to studio work. It is a pretty general opinion with photographers that a process where the image is produced by development is not very desirable; and another drawback will perhaps be found by having to float each print separately on two different solutions, but practice will soon settle this point.

The last processes to be considered are the mechanical printing processes, by some of which very excellent results are obtained; but the expense, labour, and time required in their practice make them unavailable for single prints or small quantities, as no plate can be made with the shadow of paying a small profit from which five dollars cannot be realized as a minimum; so, at least, I have been informed by different parties who work these processes commercially. Where large numbers of copies are required, these processes will certainly supersede silver printing, but this business will go into the hands of large establishments.

In investigating the fading of silver photographs, the first and most important question to be answered is: Are the silver and gold compounds which form the visible image permanent? Which, I think, can be answered in the affirmative, as everybody owns, or has seen photographs taken at various times which are perfectly preserved. I myself have some twenty years old, which are perfectly preserved, but all the rest have faded and discoloured to a greater or lesser extent; but the most convincing proof I found of the perfectly unchangeable nature of the image is in all those of my coloured pictures called ivorytypes, made from ten to twenty years ago. The photographs constituting these pictures were taken on plain paper, some developed by the gallic acid process, some the ordinary ammonia-nitrate chloride silver; some small, some as large as twenty-five by thirty inches, and cemented with hot beeswax on to plate-glass. By this means the paper was perfectly saturated with the wax, enveloping the image completely, and shielding it effectively from atmospheric influences. In none of those ivorytypes that have within the last few years come under my notice can there be the least trace of fading discovered; the most delicate tints are perfectly preserved. There is not the smallest spot or stain visible, and the painting and photograph are in the same harmony as on the day when done; so unlike most painted photographs, where the silver image has disappeared, leaving the paint in unsightly daubs.

I am sorry to say that most of these ivorytypes are more or less discoloured in their transparent parts, I suppose by the oxidation of the wax where it was exposed to atmospheric influences; but where it was protected from these, as in those

parts of the work where body colours had been employed (which are mostly metallic oxides), enclosing the wax between the glass and the paint, the tone is unaltered. These ivorytypes were made during a period of twelve years, and I cannot guarantee that the photographic part of them was done on all in the same manner; but they are all alike perfectly preserved, whereas plain photographs, on plain paper, made at the same time, and under the same circumstances, and kept framed in a dry room, have more or less faded; showing distinctly the preservative property of the wax.

The next question to be considered is: What makes silver prints fade? Three main causes have been assigned as conducive to the fading of silver photographs: the mounting materials, the presence of soda, and outside influences.

To test the first, some prints made in the ordinary way, and well washed, were mounted with some decomposed starch or gum; others, with fresh, were exposed in a very damp and impure atmosphere for over one year, when they showed slight fading all over, uniform, no difference with sour or fresh mounting material, settling this point. To test the second point, the presence of soda, prints from which the soda, after fixing, had been removed with blotting-paper only, were, in connection with well-washed prints, exposed under several thicknesses of very moist blotting-paper for three days and nights, after which time both showed signs of fading; those with free soda being a little lighter, and the tint of the image somewhat more brown than the washed ones. This result surprised me, as I expected to see the soda prints perfectly destroyed; and I am convinced that a trace of soda left in prints which are kept under favourable circumstances will not affect them to any noticeable extent, and that the presence of soda in prints is not of so great account as generally supposed.

To test the effect of outside influences, prints made in the usual way, and mounted with fresh starch, were one half of the surface covered over with sour starch, and exposed with those mentioned above as having been mounted with sour starch to the same influences. After one year's exposure the one-half covered over with the sour starch showed very distinct fading in proportion to the varying thickness of the starch covering; whereas the uncovered halves were but slightly affected. Other well washed prints, mounted with fresh starch, were exposed under several thicknesses of blotting-paper which had been well moistened with hyposulphite of soda fixing solution, and after an exposure of several hours were almost destroyed. These results convinced me that outside influences are the most effective in regard to the fading of silver photographs, as likewise illustrated by the preservation of the above-mentioned ivorytypes.

Silver photographs made on different papers are influenced differently, and withstand the destroying elements differently. Albumen prints, with very few exceptions, fade and discolour simultaneously; prints on plain paper fade, but do not discolour, at least the paper does not more so than ordinary paper under the same influences. Since the introduction of highly albumenized papers this discolouration has very much increased. This difference is very marked on prints kept in an album for fifteen years, the whiteness of the paper of which has suffered but little, whereas prints made within the last few years have very much discoloured, the first ones being on single, the last ones on double albumenized paper.

Another decided difference is in the tint of fading prints on these two kinds of paper. On the single and on plain paper the remaining tint of the image is blackish, whereas on the double paper the remaining tint of the image is mostly brown or reddish-brown, always on a more or less discoloured albumen film. In fading out silver prints artificially there is a marked difference in the way different substances attack and change the colour of the image. Cyanide of potassa and hyposulphite of soda seem to attack the tint which is supposed to be produced by the gold, first

changing it from purplish-black to muddy brown, whereas sulphuret of potassa attacks the reddish tints first, changing the tone of the remaining image to a pure black.

Cyanide of potassa does not change the tint of the albumen, but sulphuret of potassa turns it from yellow to brown, according to length of exposure and thickness of albumen film.

It will be asked what produces the difference in the amount of fading of silver prints made on the same paper under similar conditions. This, I think, in most cases, can be explained by the difference in strength of the negatives, difference of albumen film, over or under-printing, and consequently great difference in the changes produced by the gold toning bath.

I think it admits of no doubt that prints made from strong negatives, consequently stronger printing and gold toning, will resist fading influences better than those made from thin negatives and slight toning.

Prints on thinly albumenized paper permit of a deeper incorporation of the image in the body of the paper support, and having less organic matter to expose to atmospheric influences, will suffer less and keep an even surface even after the application of water. This is entirely different with double albumenized papers. Prints on these papers, when closely examined after being mounted, will be found to have cracked into millions of particles, but firmly adhered to the paper; after the application of water, these little pieces curl up, leaving open seams between them, giving free entrance to their great enemy, the sulphuretted hydrogen of the atmosphere, and the body of the albumen film being of considerable thickness, the absorption of moisture will be greater; consequently, the process of fading is more energetic and quicker than with single albumenized paper. I think the sooner these highly albumenized papers are discontinued the better.

As it is my conviction that silver prints suffer most from outside influences, and that, for want of anything better, we will have to use the silver processes for who knows how much longer, I have directed my labours of late to produce prints that will resist these influences, with what success you can judge for yourself by the accompanying samples. Prints made in this way were immersed simultaneously with ordinary prints in solutions of cyanide of potassa, hyposulphite of soda, and sulphuret of potassa, and came out uninjured, whereas the ordinary prints were completely destroyed, and a prolonged exposure over a hot solution of sulphuret of potassa failed to attack them in the slightest degree, and I think that silver prints which can withstand these tests might be considered as permanent as most other things that are considered so, or as much so as reasonably could be expected.

PHOTOGRAPHY AND FORTUNE-TELLING.*

SOLOMON, had he lived now, would scarcely have been able to say that there is nothing new under the sun. The combination of the art of photography with the cheat of fortune-telling is, at least, unique. An inventive genius named Thomas Jennings, or, as he preferred to call himself—from motives of modesty, perhaps—Thomas Henry, must be credited with the discovery of this new road to affluence. Mr. Jennings, who up to the end of last week carried on business at Cooper's Road, Old Kent Road, displayed in his operations that sublime simplicity which is one of the special characteristics of the highest order of ability. He merely asked people to be duped, and hundreds, if not thousands, at once kindly complied with his polite request. In April last the ingenious photographer seems to have inserted in various papers an advertisement headed "Important," to the effect that unmarried persons, sending their description,

* South London Press.

date of birth, and eighteen stamps—this latter item, of course, on no account to be omitted—would receive in return "beautiful artistic likenesses of their future husbands or wives," together with "my wonderful fascinator and love secret, carefully sealed."

The number of persons duped by this very transparent device may be guessed from the fact that the Commissioners of Police in a few weeks received hundreds of letters complaining of the fraud practised on the writers; while six hundred portraits of ladies and gentlemen were found on the premises occupied by the clever Mr. Jennings, to say nothing of thousands of printed circulars and letters from Australia, China, and other places abroad. Some correspondents suggested that the fortune-telling photographer should predict for them the winners of the Derby and the Oaks, and a damsel of the mature age of fourteen was extremely anxious to behold the portrait of her future lord. Mr. Joseph Dell, who is somewhat vaguely described as "a salesman," answered the advertisement, and complied with its conditions, whereupon he received the photograph of a young lady, and a printed paper informing him that he would be married to her in nineteen weeks. As, however, Mr. Dell is only four-and-twenty, and has already entered the bonds of matrimony, he considered the contingency improbable, and forwarded the circulars as well as the photograph to the police. One of these documents spoke of "a magnetic secret, so fascinating in its effects as to make true love run smooth," which was to be obtained for the ridiculously small sum of two shillings. For a like amount "the Spanish love secret, discovered by a native of Madrid," was procurable. And for twenty-four stamps also "How to fascinate" was sold by the bottle. The flavour of this last compound is described as delicious, "it captivates the senses," and, thanks to its aid, no young lady or gentleman, according to Mr. Jennings, need pine in single blessedness.

"A handsome banking account," has rewarded the exertions of this amiable and enterprising photographer; but genius is not always appreciated, police magistrates are very often the most prosaic of mortals, and they absolutely decline to encourage the chivalrous generosity which, for the absurd consideration of two shillings, offers to make the course of true love run perfectly smooth. Mr. Slade, indeed, has committed the crafty Jennings to hard labour for three months, stigmatizing him at the same time as a rogue and vagabond. This is disheartening; but the thought of his handsome balance at the bank will no doubt serve to console the modern wizard and dealer in photographs and love-philters during his enforced seclusion from society. By the time he emerges from his quiet retreat at Wandsworth, Mr. Jennings will no doubt have devised some new means of adding to his resources. He will find plenty of fresh gulls—people with money, but without brains—and we are inclined to agree with Mr. Montagu Williams that his dupes deserve very little commiseration. It may be said of most of them, we suspect, that they never half believe in the imposture to which they yield, and that—

Doubtless the pleasure is as great
Of being cheated as to cheat.

WE mentioned the first hearing of the case above referred to a fortnight ago. Last week it was again brought forward on remand at Southwark, when Thomas Henry, *alias* Jennings, described as a photographer, living at 42, Cooper's Road, Old Kent Road, was charged with obtaining sums of money from a large number of persons on pretence of 'telling their fortunes.' Mr. Montague Williams defended the prisoner.

It appeared from the statement of Inspector Fox that an advertisement, of which the following is a copy, appeared in a weekly publication in April last:—"Important.—Any

unmarried persons sending their description, including date of birth and eighteen stamps, will receive in return a beautiful artistic likeness of their future husband or wife, also my wonderful fascinator and love secret carefully sealed.—Address, T. Henry, 42, Cooper's Road, Old Kent Road." In consequence of that, the Commissioners of Police had received hundreds of letters complaining of the fraud practised on the writers, and the result was the apprehension of the prisoner on a warrant.

In addition to the evidence given last week, Joseph Dells, a salesman, residing in Tanner Street, Barking, said that on the 6th of April he saw the advertisement in question, and in consequence of that he forwarded a letter to Mr. Henry, of which the following was a copy:—"Lodge Farm Villas, Lodge Road, Rippleside, Barking, Essex.—Sir, seeing your advertisement I shall be obliged if you will send me a photograph of my future wife, for which I enclose eighteen stamps. My friend has recommended me to write to you, as he firmly believes in you, and is satisfied with what you have done for him. I am rather dark, dark hair, loving disposition, fond of home and children. My age last birthday was nineteen years. Hoping to hear from you soon,—Yours truly, J. THOMAS.—To Mr. Henry, 42, Cooper's Road, S.E. PS.—The date of my birth, August 23, 1859." In answer to that letter, he received a photograph of a young lady and a printed paper, informing him that he would be married to her in 19 weeks, and asking him to recommend the writer to his friends. Witness added that he was 24 years of age, and was married. In answer to Mr. Slade, he said one of the printed circulars sent to him was relating to a magnetic secret, which was "so fascinating in its effects as to make true love run smooth," which could be had for 24 stamps; also the Spanish love secret, discovered by Signor Andaluza, a native of Madrid, to be had for 24 stamps from Mr. Henry. There was another circular enclosed, "How to fascinate," at 2s. a bottle. The flavour of the latter was described as "delicious, and captivates the senses. No young lady or gentleman need pine in single blessedness."

Inspector Fox produced upwards of 600 portraits of ladies and gentlemen found at the prisoner's place. He also found thousands of those printed circulars and letters from Australia, China, and other places abroad. Some of the letters asked for the winner of the Derby and Oaks. One letter came from a girl 14 years old, asking for the photograph of her future husband. Witness had ascertained that the prisoner kept a handsome banking account in the name of Jennings, and that on his marriage certificate he went by the name of Nodes. No doubt, from the letters and documents he found, the prisoner had been for some time carrying on a very successful fraud on the public. Among the letters were several declining to accept his advertisements at any price. Witness added that there were a number of other witnesses ready to give evidence.

Mr. Williams said that after the decision of "Marsh v. Hilton" he was satisfied that the magistrate could not do otherwise than convict the prisoner under the Vagrant Act; but, as the persons who had consulted him were not entitled to much commiseration, he thought the ends of justice would be met by the prisoner finding bail to come up for judgment when called upon. It was the first case of the kind in this district, and it would, no doubt, be the last. Had the magistrate power to inflict a penalty he would be urged to do so.

Mr. Slade said that the statute gave him no power to inflict a penalty in such a case, even if so inclined. The prisoner had pleaded guilty to shameful practices which must be put a stop to by the strong arm of the law. He was, however, unable to inflict the punishment he deserved, but he should put the law in full force by sentencing him to three months' hard labour.

The Photographic News.

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CAN PERMANENT PHOTOGRAPHS BE PRODUCED?

WE reprint on another page an article by a Philadelphia professional photographer, of some position, on the fading of silver prints, who affects to doubt the existence of any available and practical process of securing permanency, and enters into a defence or apology for silver printing. It is somewhat late in the day to argue the question of carbon *versus* silver! Nevertheless, silver has so many claims to affectionate consideration, that one readily sympathizes with its champions. It was the first process whereby photographs were produced, and it has been brought to such a state of perfection as regards results, that we readily concede anything which can be urged in its favour, however hopeless it may be to change the note of photographic progress. We should not have felt called upon, therefore, to notice Mr. Wenderoth's remarks, beyond reading them with interest, but for the fact that he in some degree challenges our published opinion on the subject, quoting a remark from one of our articles to the following effect: "When permanent printing processes exist, it is amazing that another silver print is produced." After quoting this remark, Mr. Wenderoth adds: "Reading this I wondered what he [the Editor of the PHOTOGRAPHIC NEWS] meant; certainly not the carbon processes," and so on. That Mr. Wenderoth, and any puzzled by a similar "wonder," may be assured of what we did mean, we must reaffirm the remark, and add, the carbon processes, certainly—or, as they should be more correctly termed, the pigment processes. If permanent pigments be employed, in which there is no difficulty, then the prints produced by these processes are permanent beyond a question. And as permanent processes exist, we may, very legitimately, repeat that it is amazing that another print by a fading process exists. The carbon processes are, according to Mr. Wenderoth, for general use impracticable, because "a large part of the business of portrait galleries is touched-up work, either painted, india ink, or crayons," and "to use carbon prints for this kind of work is out of the question, as its surface, being either collodion or non-absorbing gelatine, is even a great deal worse than albumen; and water-colours, applied when mixed with gum, will crack off dry; or, without gum, will rub off by slight touch." On reading this, we are, indeed, tempted, as was Mr. Wenderoth, to "wonder what he means!" We thought that the time when the large proportion of the work of the professional photographic portraitist was all "touched up work" was long since past, and that photography pure and simple now constituted the staple of the majority of good studios. However, of the nature of the business in American studios we know probably

much less than Mr. Wenderoth. But of the fitness of pigment prints for colouring, it is manifest that Mr. Wenderoth knows much less than it is desirable that he should know, and much less than is the fact. When pigment prints are to be finished in water-colours, it is not necessary or customary that their surface should be treated with collodion. But failing this, he says, it must be "non-absorbing gelatine." Where did Mr. Wenderoth meet with such a material? The material of a pigment print is in reality no longer gelatine simply: it is gelatine changed by combination with a mineral substance and the action of light, as leather is chiefly gelatine changed by a "tanning" material. But the gelatine, although essentially changed in both cases, and made much more durable, does not in either case become non-absorbent. A pigment print is in no wise unfitted for finishing in water-colour. We have, indeed, seen some of the most charming water colours ever produced by the aid of photography produced on a carbon basis by a portraitist who, whilst still sending out silver plain prints, scruples to send out skilled artistic work on a basis less permanent than carbon. As one of the earliest experimentalists with Swan's process, and the producer of the first book on the subject, we made early experiment in painting both in oil and water-colour on a carbon basis, and satisfied ourselves of the fitness of the surface for either. For crayon work, it seems to us that there could be less difficulty than is presented by albumenized paper. Any surface requires treatment to render it fit for the easy applications of crayons, and carbon prints certainly not more than others.

Our reference was, as we have said, to pigment printing, and the marvel that fugitive prints should continue to be produced after a method of producing permanent prints was known. But Mr. Wenderoth deals with other methods in a somewhat too summary manner. Mr. Willis' platino-type process he thinks is too little known to determine about, and regards it as a drawback that each print has to be floated separately on two different solutions! Well, it is not likely ever to be much known if such initial objections are allowed to have any weight. To how many solutions, we wonder, are silver prints treated? The paper is floated twice, once on the salting or albumenizing solution, and once on the silver solution, besides the operations of toning, fixing, and washing.

We need not follow Mr. Wenderoth into his enquiry concerning the fading of silver prints. That the fading is only too common, is clearly admitted. The most common cause, according to Mr. Wenderoth's investigations, is outside influence, that is, atmospheric or other similar agency. He finds prints protected by wax remain good. That wax, collodion, and other similar preservative agencies give increased tenure of existence to silver prints we have often enforced. The use of strong negatives, deep printing, and deep toning, he also looks upon as aiding permanency, and of this we think there can be no doubt. Highly albumenized paper he also regards as a cause of fading, in which he may be right. But the true source of permanency is, we repeat, emphatically in the disuse of silver and the use of permanent pigments.

EXTRA MEETINGS OF THE SOUTH LONDON SOCIETY.

THE zeal of our South London friends is not satisfied with having already more than the regulation number of meetings in a year. They meet from October to June monthly. In winter they have also a technical meeting. They have an out-door meeting in the summer, and a social reunion at the house of their hospitable and genial President. They now propose to meet during the recess, and one of their zealous members offers the use of his studio for the purpose. We give this prominent position

to such worthy enthusiasm, and commend such a society to any metropolitan photographer very much in earnest in his profession.

Here is Mr. Brittlebank's letter:—

"DEAR SIR,—I shall be glad if you will announce to the members of the South London Photographic Society that I intend placing my rooms at their disposal for the purpose of discussion every Wednesday evening, from eight till nine o'clock during the recess of the above Society. The first meeting will take place on Wednesday, June 18th.—Yours truly,
"A. BRITTLEBANK."

"PS.—Members intending to be present will oblige by notifying the same the day previous.

FRENCH CORRESPONDENCE.

M. DE LAFOLLYE AND M. CHARDON'S EMULSION—OTHER COLLODIO-BROMIDE PROCESSES—M. FERRIER'S METHOD OF USING GELATINO-BROMIDE PELLICLE—PHOTOGRAPHY WITH PLATINUM SALTS—GERMAN PRINTS IN FATTY INKS—NEW TRAVELLING APPARATUS—OBJECT GLASSES BY M. STEINHEIL—NEW PHOTOGRAPHIC BOOKS—SUBSCRIPTION IN AID OF THE NIEPCE MEMORIAL.

Experiments of M. de Lafollying with Emulsions.—At the monthly meeting of the Photographic Society of France held on the 6th June last several very interesting communications were brought forward. As was stated in the PHOTOGRAPHIC NEWS for the 9th of May, page 224, M. de Lafollying, formerly the Director-General of Telegraphs, had brought before the notice of the *Société d'Encouragement* some observations on the subject of the dry emulsion processes of M. Chardon. The negatives submitted on that occasion by M. de Lafollying in illustration of his remarks completely confirmed his views, and showed what excellent results could be obtained with this emulsion, for the plates were as fresh as those taken with the ordinary emulsions. M. de Lafollying urged very strongly that the practical photographer should be able to make the preparations he requires with the employment of ordinary chemical products only. In order to frustrate the curiosity of Custom House officials, and to obviate the inconvenience experienced by the tourist whose emulsions are accidentally exposed to light, he recommends travelling photographers to carry with them solutions of silver nitrate and soluble bromide in a highly concentrated condition, or even in the state of crystallized salts, and then to make the precipitate on arrival at the place of destination, for this will require only a little distilled water. "The emulsion which I made six months ago," continues M. de Lafollying, "by adding directly silver bromide to raw collodion, and had put on one side, remains almost in perfect suspension to the present day; it only requires a brisk shaking for a minute to bring it back to its original condition. The plate that I took had been exposed for a half minute in front of a triplet objective of 0.15 metre focal length, with a stop of a 0.01 metre in aperture."* Several members of the Society had followed closely M. de Lafollying's directions, but the results obtained were not satisfactory. In consequence of the numerous doubts expressed as to the efficacy of the process, the secretary of the Society had thought it right to ask M. de Lafollying to give some additional information; this he has now done to the perfect satisfaction of every one. Confirming M. Lafollying's explanations, M. Davanne, who presided on this occasion, informed the meeting that he had himself experimented in the same direction with complete success. His first attempts were made with raw collodion, and, notwithstanding the strictest attention to the prescribed precautions, he had not obtained satisfactory results, in consequence of the highly subdivided condition of the precipitates; some of these will not pass through the filter when the solutions are to a certain extent acid or

alkaline, and pass through, on the other hand, when this condition is modified.

Other Collodio-Bromides.—A number of plates taken by the collodio-bromide or dry emulsion process were shown at the meeting, and served to prove how regular and certain its results are. Very conspicuous among these were some taken in the Forest of Fontainebleau by M. Balaguy. This able photographer remarked that he preferred to increase the proportion of the reagents, and to make an emulsion by using in the collodion three per cent. of pyroxyline and three per cent. of the mixed bromides.

M. Ferrier's Method of Using Gelatino-Bromide Pellicle.—While speaking of the above process, it may not be without interest to mention a method given by M. Ferrier for working with a sensitive film or separate pellicle of gelatino-bromide. He places it between two thin glass plates, and introduces them together into the dark slide of the camera. Developing is effected as with ordinary glass plates; but in working, as may be easily understood, the greatest care is necessary, and the pellicle must be manipulated with exceeding caution. By this method M. Ferrier has taken beautiful prints, which he exhibited to the meeting of the Society of the 2nd of May, an account of which has already appeared in the PHOTOGRAPHIC NEWS. In perusing this account I note an omission of some importance of a subject of which the *Bulletin* testifies. M. Crefeld, of Cologne, had sent to that meeting a very remarkable portrait, proving that he has discovered a means of taking any number of impressions in fatty ink, and with the lithographic press, direct from the negative. Moreover, the negative can be kept and used at the same time for making copies in silver nitrate.

Photography with the Salts of Platinum.—To return, however, to the proceedings of the meeting of the 6th inst., M. Stebbing exhibited a collection of photographs in salts of platinum. With this method, he said, a rapidity could be obtained at least four times as great as that with the salts of silver. The manipulations are also much simplified; the plates are developed and washed, and that is all. It was also pointed out by M. Stebbing that a society for working the process was about to be organized in France, who would, he added, grant licences to use it at a price of one hundred francs to professional and fifty francs to amateur photographers. In submitting further some prints and negatives taken by the gelatino-bromide process, M. Stebbing mentioned that when intensifying the negative with silver nitrate, he had succeeded in preventing the appearance of the peculiar red, mahogany-coloured tint by the use of a bath or iron oxalate. All the specimens that he submitted really possessed a remarkably uniform colouration of black and white only.

German Prints in Fatty Inks.—M. Moulleron showed a superb series of prints taken in a fatty ink by M. Frisch, reproductions of the drawings in the fine collection of the Berlin Museum. This series came from Germany, and met with as much serious admiration as the letter of a photographer in Lubeck excited laughter; in the latter the author trumpeted forth, in a fashion all his own, his process for taking prints, the licence for working which in France he wished to dispose of.

A New Travelling Apparatus.—Portable apparatus for the use of tourists being now all the fashion, it is easy to understand that all the manufacturing firms of photographic appliances take a great deal of pains to produce one of which they have the exclusive right of sale. M. Vivien showed at the meeting an apparatus of his own invention, characterised by much elegance and simplicity. It weighs altogether barely four kilogrammes; the legs of the stand fold up in three, and, notwithstanding their lightness, are solid and strong. A novel kind of small winch serves to direct the instrument on the object with great precision. The special point in this portable apparatus of M. Vivien is the ingenious arrangement of the slide; this opens on both sides, and has two

* *Bulletin de la Société Française de Photographie*, No. 125.

compartments for the plates, which can be put into place without touching them with the fingers, and also strictly in the correct position.

New Objectives by M. Steinheil.—Some new objectives by M. Steinheil, and especially intended for portraits, groups, landscapes, and reproductions, were exhibited by M. Carotte, who is the sole agent in France for this maker. These objectives are very fine, and beautifully finished; but an observation with regard to them made by the President was received with general approval. It is much to be regretted, he said, that the manufacturers will use so much brass in the construction of their instruments. Without the instruments we are already overladen on a journey, and it is much to be desired that some ingenuity could be shown in diminishing the weight of the objective. There is no necessity to be so careful of the appearance of an instrument, which is all the advantage that so much casing in brass possesses, unless it be that of increasing the cost.

New Photographic Works.—A curious specimen of litho-photography was next submitted to the meeting to delight the eyes of the members. It is a book with the title *Reproduction Heliographique de l'Essai sur les Gravures Chimiques en Relief*. There may be a risk of its being confounded with a publication with a similar title, the work of M. Motterez. At first sight it might easily be mistaken for a printed book, and it requires close examination to convince one that we have here another triumph of photography; in this case our art has really done wonders. This charming publication, together with a book of Mr. Huberson, entitled *Formulaire Pratique de la Photographie aux Sels d'Argent* are the greatest novelties in the photographic book line.

The Subscription in Aid of the Monument of Niepce.—At the same meeting there was announced the amount of the subscriptions collected by the Photographic Society of France for the benefit of the monument to be erected in memory of Nicéphore Niepce. The total of these subscriptions amounted to the sum of 5,625 francs 30 cents—a sufficiently paltry figure. The offensive partiality shown by the committee at Chalons-sur-Saône, which I have mentioned in previous correspondence—a partiality for which the Photographic Society is in no way responsible—is no doubt the cause of a want of enthusiasm on the subject of the monument. Only two days before the amount of the subscriptions was published, the violent attack on the memory of Daguerre was for a second time the subject of discussion at a meeting of the Photographic Union of France. All the members present were unanimous in resenting the accusation as one which is as unjust as it is inopportune, and after a most interesting discussion a letter containing a strong protest, which had been drawn up by the officers, was approved with acclamation. An application has been also made to the municipal authorities of Corneille-en-Parisis asking them to take the initiative in a movement for erecting a monument to Daguerre. In a former letter, relying on certain biographies, I stated that Honfleur was the birthplace of Daguerre; it is now, however, agreed that the illustrious co-inventor of photography was born in the above-named Corneille-en-Parisis, a small place near Argenteuil, in the environs of Paris. Doubtless nothing concerning the history of photography can be indifferent to the readers of the PHOTOGRAPHIC NEWS; I therefore propose to devote an article to an explanation of the respective shares which Niepce and Daguerre each had in bringing to perfection an invention which the world pursues with so legitimate an interest. To falsify history is at any time a grave offence; how much more so when illustrious men like Arago, Gay-Lussac, Chevalier, and many others besides, have exerted their great authority to promote the public homage rendered by the French Government to the two inventors conjointly, in making them a grant out of the public funds.

K. VERSNAEYEN.

HOW TO ESCAPE A BREACH OF PROMISE ACTION.

A CORRESPONDENT sends us the following:—

"The other day a muscular young fellow, having an odour of the stables about him, entered our studio, and explained that he would like to have one C.D.V. taken. After a little parley as to the proper price to be paid, he took his hat off and roughed up his hair. When he sat down he shut up one eye, drew his mouth around one side, stuck up his nose, and patiently awaited my commencing.

"'Good gracious!' said I, 'you do not want to be taken in that manner; nobody will know you from Cetewayo!'

"'You go a-head,' said he.

"'Do you really want me to take such a phiz as that?'

"'I do.'

"We took it. The photograph beat anything we had ever seen, and was highly satisfactory to the sitter. As he paid for it he said—

"'You see, I had a sort of object in this. I come from Birmingham just six months ago, engaged to a girl out there; I have found another here I like better, and so I am going to sever old ties, &c. See?'

"'No; I don't see what the picture has got to do with old ties,' I answered.

"'Lots—heaps! I've writ her that I was in a railway collision and disfigured for life. You see she's proud, and when she gets this and sees how that explosion wrecked me, she'll hunt up another lover quicker'n wiuk. See? How do you like the plot? Just gaze on that picture once, and then tell me that Polly won't send back my letters by first mail!'

"He sealed the envelope. The letter was brief, but to the point. It said: 'My Ever Dear Polly—I inclose my picture, that you may see how awful bad I was hurt, tho' I know you will luv me all the same.'

"'Ever see this game worked afore?' he said, as he licked the stamp.

"'No; never did.'

"'Course you never did; it's mine. It struck me the other day when doing a boss. Collision. See? Disfigured for life. See? Picture enclosed to prove it; and she'll write back that she has at length concluded to yield to her parent's wishes, and not marry me, but another fellow who owes a cab of his own.'

"RODERICK RANDOM."

MY EXPERIENCES WITH GELATINE PLATES.

BY H. GARRETT COCKING.*

As Solomon says that "there is nothing new under the sun," possibly difficulties in working gelatine plates may have gone through thousands of years ago. But as I found we had only one paper for this evening, I thought, perhaps, a few words on the subject of gelatine plates might produce a good discussion.

I must begin by saying that, prior to two months ago, I had not had any experience with dry plates of any sort, and have always believed in the wet process as being the best suited for the professional portrait photographer. Two months ago I first tried the gelatine plates. Having stopped out all the light from my dark room, and having reduced the window to about three inches square, I began to work. I exposed a plate, but did not get the ghost of an image. Thinking that perhaps I had underexposed, I gave a longer exposure, and got nothing. After repeated trials I succeeded in getting some faint trace of the image, and, strange as it may appear, the only negative that could possibly be printed from was exposed forty seconds.

Well, not having either the time or the inclination to keep on experimenting, I thought I would accept a kind invitation I had received from Mr. W. Cobb, and take my woes to him. Accordingly I took some of my bare glass

Read before the South London Photographic Society.

(for you could not call them negatives) down to Woolwich; but Mr. Cobb even was unable to account for my utter failure, and so am I to this day. I saw Mr. Cobb take some negatives, and he very kindly demonstrated the whole working of the process to me. The next day I began again on my own account.

The first sitter being that day a baby, I employed a dry plate, and as a necessity gave a very short exposure, the result being an excellent negative. Since then I have never met with the same failure I at first experienced; but why a long exposure should have succeeded in my first experiments, when, as it would appear now, that short exposures only lead to success, I am quite at a loss to account for.

So much for my first experiences. Now for a few of my later ones. First, I had to consider the matter of getting a better light to develop by. I procured some of the ordinary orange paper and pasted my yellow glass over. Finding the light still weak, as my dark room window is small, I well oiled the paper, and found that I then had a very good light to work by. I have brought part of my window with me to-night, so that you can judge of the amount of light admitted. I find it answers just as well in front of artificial light. The sun, when it shines—which, I am sorry to say, has not been much lately—does so in the afternoon direct on to my dark room window; but I have found as yet no trace of fog.

The greatest difficulty I find with gelatine plates is in getting sufficient density if the plates should happen to be a trifle over-exposed, and when a second makes a vast difference it is a matter of some difficulty to hit the right exposure. A little more ammonia added to the developer will secure this, but I find it also acts upon the shadows, and still the negative prints up flat.

I think, perhaps, I work in rather too much of a hurry. I mean that it seems to me we do not keep the developer on long enough. I do not know if other wet-plate workers have found the same result, but I imagine that directly all the detail is visible we must stop the development. Now, I have found that by developing slowly and keeping the developer on a long time much greater certainty may be obtained in the density; therefore I think the best plan is not to develop the negatives at the time of exposure, but leave them till the latter part of the day or evening when you are not hurried, which is the case when sitters are waiting.

Another thing is that the ammonia acts upon the negative bath when worked in the same room. Mine, a few days after using ammonia in the dark room, gave nothing but pinholes, and, as I still occasionally use the wet process, I have had to have another dark room built to work it in.

I have also brought a few prints and negatives with me. They are nothing very grand; but, only having been at the work two months, I think they may be taken as being an evidence of the right way having been entered into. I may mention that the children are all taken as nearly instantaneously as possible.

My principal object in bringing before you these few experiences is this: that possibly many in far-away places may, meeting with similar difficulties to those I have alluded to, and not having the benefit of conferring with those whose previous success would lead them to suppose that some benefit might be gained by conferring with them, may derive hope from the well-known proverb—"Perseverance overcometh obstacles."

I think I will now close, hoping that some of the older workers may have something to say upon what I consider one of the greatest wonders of modern photography—gelatine.

PS.—Since writing the above, I have had my new dark room finished. I have mentioned in my communication that soon after beginning to work the gelatine plates the ammonia upset my bath, which gave pinholes to a fearful extent. Not having another room convenient, I set about building one, which was finished on Tuesday. Knowing

that my bath gave such awful results, before I tried it again I placed some nitrate of baryta in the bath, and immediately the pinholes vanished, and every plate worked well. I merely mention this fact that any one encountering the same difficulty as myself may at once cure it in the same way. I do not know the quantity of solution in my bath, but it is an ordinary 10 by 8 glass dipping bath full, to which I added ninety grains of nitrate of baryta.

Correspondence.

DRY PLATE WORK IN THE STUDIO.

DEAR SIR,—When you published my letter on the 9th ult. I was quite unprepared to face the enormous personal correspondence which has since ensued in reference to the use of dry gelatino-bromide plates in the studio. I thought that my reply through you the following week would have set the matter fairly at rest. But no; still they come from all quarters, and in such quantities that personal reply is simply impossible without the assistance of a very smart secretary, not to talk of stationery and stamps for between six and seven hundred letters.

I am asked over and over again questions I answered in your issue of the 16th May, to which correspondents will kindly refer. One point I certainly overlooked, that of the healthiness of dry plate work; and all who have made enquiries on that point may rest assured that it is far before collodion. For my own part, I was very seldom free from headache (sometimes very severe) with nausea after the day's collodion practice; but since adopting dry plates I seem to live a new life, headaches have vanished, my work is a pleasure, and the worry of business reduced to a minimum. I believe this to be the experience of every successful dry plate worker.

A month since I had no idea of entering the commercial list, and within that time I have been simply forced into it through the earnest and pressing applications of numerous correspondents anxious to be supplied with good plates and emulsion, and get well started in dry plate work. This has compelled me to abandon—at least, for the present—the giving of practical instructions in the making and use of dry plate material at photographers' own establishments, which I at first consented to do, and which has been a very pleasant duty indeed so far as it has gone. I can now only hope that simplicity of printed instructions in working a simple system will enable all our clients at a distance to succeed perfectly with this queen of photographic processes. —I remain, dear sir, yours, &c., W. H. NELSON.

Twickenham, S.W.

ELECTRIC SHUTTER.

DEAR SIR,—If any of the readers of the PHOTOGRAPHIC NEWS who have had any experience with an electric shutter which was extensively advertised last year would be so good as to inform me by post as to their opinion of its merits or demerits, I should esteem it a great favour, as the information would be of considerable use to me if received not later than Monday next.—I am, sir, your obedient servant,

G. WATMOUGH WEBSTER.

19, Bridge Row, Chester, June 10.

BEECHEY EMULSION.

DEAR SIR,—I find that if the bottle containing the collodion is warmed by immersion in hot water, before flowing the alcoholic solution of silver into it, the resulting emulsion is much smoother, and there is an entire absence of those clots which sometimes make their appearance in this otherwise faultless process.

Your correspondent of last week, "Content," is not half lazy enough: he ought to employ someone to push his "Salvo-Quadricycle" for him, who might develop his plates on his return home. The same party might perhaps expose the plates, so as to take all the bother and trouble off "Content's" hands.—Yours truly, R. GORDON.

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE monthly meeting of this Society was held on Thursday, June 5th, at the Society of Arts, John Street, Adelphi. The Rev. F. F. STATHAM, M.A., presided in the chair.

The SECRETARY read the minutes of the last meeting, which were confirmed. Mr. S. W. Rouch was elected member of the Society.

THE CHAIRMAN said that he was pleased to see two of the younger members coming to the front by reading papers; he thought that was a good augury for the future of the Society. He remembered years ago that some had come forward with papers in a very humble way, and gentlemen that were still members of the Society, and now were ornaments to the profession, which was very gratifying to see. He then called on Mr. Brittlebank to read his paper "On the Future Usefulness of the Society" (see page 278).

THE CHAIRMAN said that he felt sure that all must agree with the paper they had just heard read, but at the same time it was rather a difficult subject for the Society to deal with practically. He had an idea that in years past something similar had been introduced or proposed by some other member, and he was of an opinion that it won't do a great deal of good to novices or younger members of the profession; but the great difficulty was that it would require a certain amount of capital which a society like this had not at its command, and he was quite sure if it was possible to carry out the idea it would greatly improve the knowledge and taste of its members.

MR. FOXLEE said that the Society of Arts, he thought, had something of a similar kind, so that members of the profession could pass in the different grades.

MR. E. COCKING said that he understood that what Mr. Brittlebank meant was to establish a purely elementary class; in the one just alluded to money prizes were awarded.

MR. BRIDGE said that he remembered something of the same kind being proposed, but the question was, who was to pay for it, as it was impossible for the Society to think of such a thing, as he might say that we had no home of our own.

MR. FOXLEE said there was a class for photography already in existence at King's College; it was formerly under Mr. F. Hardwick; also one was held at the Polytechnic, Regent Street.

THE PRESIDENT remarked that if such an affair was established, it ought to be established on a commercial basis.

MR. BRIDGE said that he remembered, some years ago, that a class in connection with a Musical Society was established, but the only way the society was able to carry it out was to have it open one whole week or more in the year, and engage the best professors possible; and then pupils came from all parts to study, such as governesses, teachers, &c. They came up for the week or ten days, and stayed the whole time; and he had no doubt that many derived a great benefit from such a course of instruction.

MR. FOXLEE thought it would be impossible to devote any evening out of the Society's meetings to such a purpose, as we had only eight business meetings in the year, and practical members would take no interest in meetings of such a character.

MR. G. COCKING (the Secretary) then read a paper, "Experience with Gelatine Plates in the Studio" (see page 284). Specimens were handed round.

MR. BRITTLEBANK said that he had found the same thing occur after developing gelatine plates in the dark room: that his ordinary negative bath for the wet process gave pinholes.

MR. FOXLEE said that he could not conceive how pinholes could be produced by ammonia fumes in the dark room; he should think that it was owing to the increase of temperature during the last few days.

MR. CLARKE said that he had noticed that his bath, after a day's rest from Saturday till Monday, often gave pinholes.

MR. FOXLEE, alluding to Mr. Cocking's failure in not getting an image, said perhaps Mr. Bennet's theory might explain, as he stated that over-exposure gave a positive image, and a greater exposure gave again a negative image, and it might be between these peculiar changes that he was unable to obtain a result.

MR. A. COWAN handed round for inspection some charming cabinet negatives taken on gelatine plates, also some prints; he said that most of them were taken with one or two seconds' exposure, and he might state that he could get plenty of intensity by first commencing the development with a six-grain pyro solution instead of a three-grain as recommended, and then adding a few drops of the ammonia and bromide solution; this gave a feeble image, which was then finished off. With the full dose of ammonia and bromide

it was always best to get too much density than not enough, because the former could easily be reduced, whereas the latter had to be intensified, which was not altogether satisfactory. With the bromide and ammonia solution he used it diluted, so that when the pyro solution, that was six grains to commence with, at the finishing was only about two grains strong. He had developed a great many plates by this system, and had been very successful. He had developed as many as five in a dish at a time. If all were exposed alike, all came up alike. He considered now to develop a gelatine plate was a very simple matter.

MR. HAZARD also handed round some very fine landscape specimens taken on gelatine plates, which were greatly admired.

MR. PAYNE JENNINGS said that he should like to know a good reliable intensifier for gelatine plates, as it seemed almost impossible to judge as to density in the dark room, the plates being so opaque.

MR. COWAN said that he judged the intensity by the time they took in developing (of course his experience was in the studio), but if the exposure was right there was not any difficulty; but plates by different makers varied very much indeed.

MR. Wm. BROOKS said that some time ago he developed some commercial plates, which were very dense indeed, so that the true density could not possibly be seen; but on fixing, the image vanished to a mere phantom, which was perfectly useless. The films before exposure were as dense as a deal board.

MR. LAVENDER said by what he had heard this evening it seemed that a machine could develop a dry plate now.

MR. YORK said what was wanted was some means of local intensification; if that could be discovered it would be very useful.

MR. PAYNE JENNINGS was of the same opinion as Mr. York.

In response to a question put by the Chairman,

MR. COWAN stated that his experience with dry plates in the studio dated from October last; and

MR. HAZARD said that he commenced the use of gelatine plates about the same time.

A vote of thanks was then passed to the gentlemen who had contributed to the evening, and the proceedings terminated.

THE PRESIDENT said that he should be pleased to see all the members at his house on the last Saturday in July, as usual.

It was proposed to hold the out-door meeting at Highgate the last Saturday in August, but particulars would be duly announced after arrangements had been made.

PHOTOGRAPHIC SOCIETY OF FRANCE.

MEETING of the 4th of April, M. PELIGOT, Member of the Institute, in the chair.

The announcement having been made in one of the scientific journals that the Vicomte de Verguet-Lamotte, a well-known viticulturist, had discovered a method of analyzing vines by means of photography, the Secretary wrote to ask for particulars, and received a reply from which it appeared that M. Lamotte has been in the habit of examining various kinds of wine with the microscope, and also making microscopic preparations of the same; of some of these latter photographs had been taken, and this was all the foundation for the erroneous statement.

A letter was read from M. PAUL GAILLARD offering a sum of five hundred francs for the foundation of a prize to encourage photographic research, and begging the executive committee of the Society to draw up the conditions for the competition.

Among the articles from foreign journals brought under the notice of the meeting was one from the PHOTOGRAPHIC NEWS containing Mr. Houlgrave's formula for decreasing the proportion of gelatine in emulsions.

M. FERRIER observed that he had met with the same difficulties as Mr. Houlgrave, and had obviated them by adding to the emulsion a little non-emulsified gelatine. He had also found that in whatever way chrome-alum was used, it always acted as a retarder.

Appropos of the discussion which arose in the Photographic Society of Great Britain on a communication from Mr. Berkeley as to the employment of opaque gelatine,

M. STEBBING remarked that Mr. Kennett expressly recommended the use of that kind of gelatine. He added that a test of the goodness of gelatine is its non-precipitation by acetic acid.

M. ROGER was of opinion that all kinds of gelatine gave good results. He had made emulsions with the glue called *colle de Givet*, and had obtained results as good as those with the finer and more expensive gelatines.

M. FERRIER observed that anyone who wished to have a gelatin of uniform quality should use fish-glue, a natural product, very constant in character.

M. CHARDON had tried from twenty to thirty specimens of gelatine, and had found that neither the fineness nor appearance

of the sample gave any indications of its photographic qualities; those depend rather on its being tough or tender. The hard or tough kinds are very good, while the tender ones give rise to blistering, which can only be got rid of by treating the gelatine previously with alum.

M. STEBBING laid on the table some packets of dry gelatino-bromide, and expressed a hope that it might be tried by the committee appointed to report on dry processes; also a bottle of iron oxalate developer whose formula was somewhat different from those hitherto published. This developing solution, he said, might be used for an indefinite period, provided it were kept in the dark. The plate must be left in the bath until, on looking at the face, the high lights made their appearance. It is then finished, and requires to be only washed and fixed. As with the use of this bath a great latitude in the length of exposure was admissible, success would be certain; only the shorter the exposure the longer the development.

M. GOBERT had tried the developer, and was able to corroborate all that M. Stebbing had said of its good qualities. He inquired whether it was equally adapted for collodion emulsions.

M. STEBBING replied that it is not so suitable for collodion; he had found, in this case, the alkaline developer much better. In reply to other questions, M. Stebbing added that for preparing an emulsion with the pellicle, of which he had placed samples on the table, he employed the following formula:—

Pellicle	...	...	...	10 grammes
Water	...	...	...	110 "
Alcohol	...	...	...	5 "

The pellicle is dissolved over the water bath at a temperature not exceeding 40° C. To coat the plate (which must be warm), he uses a pipette in the shape of a narrow funnel, which he fills from the top with the gelatine solution, keeping the lower end closed by the finger; in this way any bells which may show themselves in the upper portion can be easily removed. Now, removing the finger, he allows the solution to flow over the plate from the centre outwards, and distributes it either with the finger, or with a glass rod. So soon as the gelatine is set, he places the plate to dry on the shelves of his laboratory.

M. FRANCK DE VILLECHOLLE observed that gelatine in the form of pellicle is more sensitive than when it has been kept for a time without undergoing desiccation.

M. CHARDON laid before the Society the results of his further experiments with collodion made from Russian cotton wool (see account of the proceedings of the Society in *PHOTOGRAPHIC NEWS* for April 10, p. 179). The collodion prepared according to the formula then given was found so porous that the negatives produced with it were too soft, and could only be intensified with great difficulty, defects which he now attributes to the high temperature, 85° C., to which it was submitted. In his more recent experiments, having a larger supply of the cotton, he had been able to make two kinds of pyroxyline—the ordinary and the precipitated. The first experiment was made at a temperature of 60° C., which was found to be too low, as the mixture of potassium nitrate and sulphuric acid remained in a pasty state, and the cotton could not be well immersed in it; with a temperature of 65° C. he succeeded better, using the following formula:—

Sulphuric acid	...	...	...	1000 parts
Potassium nitrate	...	...	...	500 "
Cotton	...	...	...	25 "

The cotton was left in this mixture for five minutes, then taken out and thoroughly washed in water until no trace of acid was left. Of this pyroxyline M. Chardon dissolved one hundred grammes in two litres of alcohol and four litres of ether, and left the solution to stand for sixty hours; he then decanted, and precipitated the pyroxyline from the collodion thus prepared. He prepared the bromide emulsion with 6.5 per cent. of the precipitated pyroxyline, but found that the film made with it was poor, and that the plates remained very transparent. This he attributes to the steam at high pressure to which the cotton is submitted in the preliminary stage, in order to get rid of the resinous particles; this attacks the fibre, causing the pyroxyline to be very porous and wanting in cohesion, so that the silver bromide is not properly retained in the emulsion. In conclusion, he was of opinion that there is no advantage obtained by using this kind of cotton in the emulsion processes. He was not aware whether it would have the same results in the wet collodion process, but all the facts led him to think so.

M. ROGER submitted to the meeting some negatives taken with gelatino-bromide after the formula of M. Ferrier. No importance was attached to the kind of gelatine used, though, as a matter of fact, all the sorts experimented with were transparent. M. Roger highly praised the gelatino-bromide process on account of its

simplicity and the ease with which the emulsion is prepared: the only tiresome and difficult part of the process is in the drying. For this he recommended a drying box made of soft wood, with sliding shelves of rather smaller dimension than the box itself, and so arranged that a current of air could be made to pass all round and between them. If this box be placed over a warming-pan or hot water plate, the plates will be dry in a few hours. Or a draught may be set up by means of a chimney flue on the top of the box, in which a night light is kept burning, taking care that the air before admission is dried by being made to pass over calcium chloride, or pieces of pumice moistened with sulphuric acid. When heat is used it must not be too great, or on dipping the film in the solution of hyposulphite it will crack in all directions. Also before flowing the gelatine over the plate the latter must not be too warm, or bubbles will form and spoil the film.

M. DAVANNE, in behalf of Mr. Woodbury, exhibited some specimens of paper as transparent as glass, to be used for transferring negatives. On another occasion Mr. Woodbury proposed to make a further communication on the subject.

M. STEBBING remarked that lithographers were in the habit of using a paper which, as far as transparency goes, was very similar to that exhibited; and

Capt. JOLY stated that paper when treated with copal varnish becomes quite as transparent as that of Mr. Woodbury.

Several members believed that paper which has been coated with a resinous varnish has the inconvenience of soon turning yellow, which would be a grave defect in the case of negatives.

PHOTOGRAPHIC SOCIETY OF BERLIN.

At the ordinary meeting on the 17th April, Herr C. BRASCH in the chair, a lecture, with experimental demonstrations, was given by Herr E. DUBY, on the "Services Rendered by Photography to Science." These services, he said, divided themselves naturally into two classes:—(1). As regards the photographic recording of scientific observations; (2) the use of photography for illustration and demonstration. As instances of the former, Herr Duby referred to photographs of the spectrum, where measurements could be effected with the greatest accuracy, and to micro-photographs, which permitted of a much more extended and less fatiguing examination than was possible of the actual objects under the microscope. Of the second class, he adduced the great benefits conferred on the art of projecting with the lantern by the employment of photographic slides; what previously was nothing but an amusing toy had by this means become an important vehicle for conveying knowledge. This part of his subject Herr Duby illustrated by projecting on the screen, with the aid of the oxy-calcium light, a number of transparent photographs by Herr Ganz, of Zurich. This well-known photographer was stated by the lecturer to have devoted himself to the preparation of photographic slides for the lantern for educational purposes; among them are diagrams and pictures illustrating anatomy, physiology, botany, and zoology; architecture, astronomy (fixed and movable slides), geology, and physics, &c., all executed in carbon printing, and some coloured. The lecturer then spoke more especially of the applications of photography to astronomy, and explained the principle of construction of astronomical telescopes, illustrating his explanation by the exhibition of views of the more important telescopes at the Paris and other observatories. He described also the arrangement of the photo-heliograph and photo-siderograph, explained the method of correcting any difference of focus, and projected on the screen pictures of the celebrated instruments of Padre Secchi and Mr. Browning. Lastly, the results of photographic astronomy were treated of, and illustrated by the projection on the screen of photographs of the solar protuberance, of the planets Jupiter and Saturn, and also of some very excellent ones of the moon by Rutherford.

At the subsequent meeting on the 1st May, Herr DUBY delivered the concluding portion of his lecture. On this occasion he referred more especially to photography as a registering agent, and mentioned its use in this quality in different branches of science. He described the photographic apparatus for automatically registering the height and variations of the tide, also the barograph, thermograph, and psychro-thermograph for registering the atmospheric pressure and temperature and the hygroscopic condition of the air. The photo-sphygmograph, an instrument for reading the pulsations of the heart, was also briefly referred to, as well as other medical instruments—laryngoscope, ophthalmoscope, otoscope, and methroscope—in all of which photography is used as the registering agent, and a number of photographs illustrating their uses and capabilities were handed round.

After the lecture, Herr G. KLEFFEL, the agent in Berlin for Messrs. Wratten and Wainwright, exhibited some views of the Oxford and Cameridge boat-race, taken on their gelatine emulsion plates of that firm. The exposure was stated to have been of two seconds' duration, and, considering the foggy climate under which the views were taken, the result was regarded as wonderful. They are cabinet size, and the lens used was a D by Dallmeyer, of 12 inches focal length, with a $\frac{1}{2}$ stop.

A very lively discussion ensued on the gelatine emulsion process, and on the development of the plates after exposure. By the use of pyrogallie acid the gelatine film is partially tanned, which considerably retards the development; but, according to Herr Brasch, this difficulty can be avoided by employing potassium oxalate, or iron oxalate, as a developer.

Herr FRICK, jun., showed a couple of plates representing transparent positives taken directly. According to his own account, he collodionizes and silvers a plate as in the ordinary process, rinses it thoroughly with water, and then flows over it a particular kind of organic acid, from which it acquires the property of giving under direct exposure in the camera a transparent positive instead of a negative. The plates which were exhibited bore every evidence of being really positives; but they were generally pronounced to be wanting in transparency, and in that sharp contrast of light and shade which gives a transparent positive all its fresh look. The attention of the meeting was also drawn to the fact that the subject of direct positives was very fully treated by Dr. Schnauss in the *Photographische Wochenblatt* of last year (see PHOTOGRAPHIC NEWS for March 29, 1878, p. 119).

Talk in the Studio.

PAINTING ON CHINA.—The history of photography has often given contradiction to the commonly repeated assertion that genius or ability is not hereditary. It is by no means uncommon to find the sons of distinguished photographers treading close upon the heels of their fathers, and worthily maintaining a good reputation. An interesting illustration, in a varied form, may be found by our readers who may be sufficiently interested in good painting on china to visit the exhibition now open at Messrs. Howell and James' galleries in Regent Street. No. 201 is a charming painting entitled "Puck," which is very highly commended by the judges, who are Royal Academicians. This painting is by Miss Edith Robinson, eldest child of Mr. H. P. Robinson, with whose artistic abilities all photographers are familiar. This young lady worthily maintains the artistic traditions of the family.

To Correspondents.

A. C. B.—Negatives may be treated with a solution of albumen, but it will not be nearly as perfect a protection as varnish. It will more easily scratch, will be affected by damp, will probably stick to albumenized paper in printing, will stain, and subject to mould, mildew, and decomposition. 2. Some photographers, after retouching upon matt varnish, re-varnish with a hard varnish. But much depends on the nature of the matt varnish. If it be composed of gum-resins, soluble in the second varnish, it would not be safe to apply a second varnish. 3. The cause of newly iodized collodion quickly acquiring a deep colour is the liberation of free iodine, and this generally arises from the presence of a little acetic ether in the ether employed. The cause of the rapid loss of colour, again, is not so clear; it has been ascribed to the presence of a bromide. Our impression is that some alkaline impurity has been present, like carbonate of potash or ammonia, which, combining with the iodine liberated, removes the discolouration.

GREEDY.—Mr. Hardwich's book was entitled a "Manual of Photographic Chemistry." The last edition was edited by Mr. Dawson. The work which Mr. Sutton and Mr. Dawson issued conjointly was an edition of Mr. Sutton's "Dictionary of Photography." In our estimation, Captain Abney's Instructions is quite as useful as an aid to the study of the chemistry of photography. 2. The forthcoming work of Mr. Robinson, being a new edition of his "Pictorial Effect," will be presumably in advance of the former edition. It will be issued at a lower price.

E. K.—A brilliant purple tone is only to be obtained by a conjunction of things all in harmony. A good brilliant negative, a good sample of albumenized paper made sensitive on a silver bath of proper strength suited to the paper, moderately deep printing, and a toning bath in proper condition. Almost any of the toning baths in use will serve, but there is none better than the acetate bath for the purpose. But the negative must be a good one, with sufficient intensity.

J. B.—The coffee process, as described in our YEAR-BOOK for 1877, is one of the simplest and best dry processes we know; but all bath processes are passing away amongst dry-plate workers, emulsion processes taking their place. The emulsion process described by Mr. H. Cooper in our last issued YEAR-BOOK is a very good one. So far as we know, all the emulsion plates at present in commerce are good; but we have no means of determining which are best. It is not difficult to try. Obtain a packet of any of those you see advertised in the NEWS, and if you follow instructions carefully, we have no doubt that you will succeed. 2. It is quite impossible to answer with precision your second question, as to how much hypo is necessary to fix half-a-dozen sheets of albumenized paper. Fixing means dissolving and removing the unchanged salt of silver in the paper, and the proportion of silver salts varies with the strength of the salting solution of the silver bath, also with the kind of picture. In a vignette, for instance, there is twice as much unchanged silver salt to be removed as there is in a portrait printed-out. If you can estimate the amount of chloride of silver in your print to be removed in the fixing process, you may form some idea. Chemically estimated, three parts of hypo are required to dissolve one part of chloride of silver. It has been estimated that one sheet of paper contains from 25 to 30 grains of chloride of silver, which would require from 75 to 90 grains of hypo, or about an ounce for the half dozen about which you enquire. But remembering the frequent presence of free nitrate as well, and other varying conditions, a prudent man will use three or four times as much hypo as the amount indicated. As a rule, about four ounces of hypo in a pint of water. Many photographers make a similar complaint that their pictures of late years are less permanent than were their prints of earlier years. We cannot explain the cause, although we have at times devoted articles to consider the possible and probable causes.

A. C. S.—The work by Lake Price to which reference was made was published some years ago by Churchill and Co., entitled "A Manual of Photographic Manipulation." It was not a reprint of any previously published papers. The papers in the NEWS by Lake Price on Composition and Chiaroscuro were never published in a separate form. Mr. Robinson's papers on Pictorial Effect which appeared in the NEWS were subsequently published in a separate volume, of which a new edition will shortly be issued. We will bear in mind your suggestion as to the publication of a selection of papers from the NEWS, and give it due consideration. **J. B. L.**—A very dense negative is best printed in direct sunlight, which will penetrate those semi-opaque portions more perfectly than diffused light, and give a softer and more detailed print. Print, on the other hand, a thin soft negative, in diffused light, if you wish to secure a brilliant print. A somewhat weak toning bath is safer than one which is too strong.

CAPTAIN WATERHOUSE.—We believe it is not yet in the market. We will make further enquiry, and endeavour to send you early sample.

PRESSURE FRAME.—Captain Abney's Instruction Book contains much information on the chemistry of photography. 2. You ask what causes chloride of silver to blacken when exposed to light? We might, in reply, ask what causes fire to burn or water to flow? Perhaps it may help you better if we say that the chemical action of light has a tendency to liberate the chlorine from the silver, which is left as a black metallic powder. 3. The chloride of gold in the toning bath is decomposed, chlorine set at liberty, and metallic gold deposited, which, in a finely divided state, is purple.

2ND D. C. R. V.—We regret that your question is one which we cannot answer satisfactorily. We cannot, with propriety, undertake the invidious task of mentioning in these columns one maker of dry plates as superior to another; and if it would be right to do so, we could not, as we have never made comparative trials. We have seen very fine results on almost all the commercial gelatine plates. We believe there are none absolutely certain, as all must depend on the treatment they receive. But with care to follow instructions, we believe most of them are trustworthy.

AMATEUR asks the best way to "dry gelatine with potash for making blocks." We are really puzzled as to the meaning of his question. He also asks if he "can take impressions of gelatine in asphaltum by rubbing down on round surfaces for etching." Here also we are puzzled. What are the impressions in gelatine to which he refers, and how are they to be taken in asphaltum? We do not know any work on the subject.

J. TERRAS.—Your studies are very interesting. How far it would be worth your while to publish them, we cannot say; not because they are not pretty pictures and excellent photographs, but because the demand for such things is not great.

J. W. H. ANDERSON.—We should say that the most suitable for rapid work is that you mark B. Your statement as to the permanency of Carrier's paper is very interesting. We do not know whether it is prepared or not now.

R. SYMONS.—Your photography of mirage received. The interesting letter in our next.

The Photographic News, June 20, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AND PHOTOGRAPHERS AT CYFARTHFA CASTLE.

WITH the late Mr. Crawshay's death, Cyfarthfa Castle ceases to be the home of an "iron king." For the matter of that, as our readers know very well, it is some years since Mr. Crawshay's huge iron works were in full operation, and one of the reasons why he devoted so much of his time latterly to photography was that his principal object in life—to be an active ironmaster—had passed away. We do not mean to say that he did not commence as a photographic amateur until the management of his iron works ceased to make calls upon his time, for Mr. Robert Crawshay was always a busy man; but to photography he turned with renewed energy as his leisure increased. Another reason for his devotion to the camera was the fact that it offered a great solace under the deep affliction from which he suffered. Of late years he was so deaf that no sound could be appreciated by his ear, and he either read the expression of one's face, or words rapidly written down for his behoof. Living, therefore, in a silent world by himself, it is no wonder that he appreciated camera work, and the possibility by its means of depicting the beauties around him. So imbued did he become with the charms of photography that he ceased to regret (or, at any rate, appeared to do so) the grand—one might almost say royal—position he had held like his fathers before him. Four generations contributed to build up the fortune of the Crawshays; as feudal baron and patriarch, the reigning house of Crawshay cared for their people as a father watches over his family. The master's sons served their time and worked with the humblest at the works, and an honest workman, if he could not get justice done him in any other way, made no difficulty about seeing the master, and placing his case before that high tribunal. It was the Trades Union that broke up this friendly relation between master and men, and it "blew out" the furnaces that had been burning for generations. But, for all that, the late Mr. Crawshay never spoke ill of the Union. "Why should I?" was his argument to a deputation of workmen, who, a few years back, asked him to light the furnaces again, and call up the old times once more. "The Trades Union has been to me my best friend. It caused the men to strike, and enabled me to close my works, which I was carrying on at a loss. By the Union I have gained—or, rather, been secured from the loss of—a large sum of money. But you closed the works against my will, and thus for ever annihilated the friendly spirit that existed between us. In future it is only a matter of business between you and me, and I frankly tell you it will not pay me to work my iron at a loss." Such was the substance of Mr. Crawshay's final address to his men, when he gave up his sceptre as the iron king; since then Cyfarthfa Castle held but a dethroned monarch. But if he ceased to be foremost among British ironmasters, he speedily won renown as an art-photographer. His magnificent life-size portrait sketches taken direct in the camera won him honours in this country and elsewhere; while his generosity, when it was a question of fostering art, is widely known. He wished to see photographers get out of the narrow groove into which they had fallen since *carte-de-visite* portraits came into vogue. *Cartes* and cabinets are very well in their way, but Mr. Crawshay believed he could improve photographic art by directing it into broader channels and encouraging the depiction of larger portraits. And there cannot be a doubt that the encouragement afforded by the munificent prizes he offered for large work materially influenced photographers to abandon the narrow limits that previously entrained them. Whether heads of extreme size, measuring eight or nine inches, present the most favourable pictures or no, certain

it is that their production has taught the photographer many practical lessons; while the size (four or five inches) for which the second series of Crawshay prizes were offered is universally admitted to be one of the most charming and effective forms of photographic portrait. Mr. Crawshay by his encouragement and example may be said to have shown what is possible and impossible in the matter of large photographic portraits; and when in later times he began to turn special attention to landscape work, he proved himself an adept in this branch of the art. When offering his second series of prizes for portraits, it was suggested to him that landscape photography might also be benefitted by encouragement of the same kind, and without hesitation he at once placed £50 in the hands of the judges to be distributed for this purpose. This, indeed, was but one instance of the readiness with which he was willing to aid the photographic art and photographers. A series of sketches of a deceased photographer that were for sale was brought to his notice by a friend, who desired to raise money for the widow. "What shall I give for them?" he asked, and the amount suggested was at once paid, and received with thankfulness by the widow. If he had confidence in the application, or the person that made it, Mr. Crawshay was ever willing to give; but he was just as ready to turn a deaf ear to many doubtful claims, such as are always being made upon a rich man. His spontaneous invitations to spend a week or a month at Cyfarthfa Castle were extended year after year to a group of gentlemen connected with photography, and as a generous host he spared no pains in making his visitors welcome and comfortable. The vast rooms of the Castle, its handsome terraces, trim lawns, bowery gardens, and shrubberies of pine and laurel, afforded a delightful sojourn to a dozen or more of visitors, whose wants and requirements made no especial call upon the resources of the establishment. Mr. Crawshay's pineries were famous not only in the county, but throughout Wales; while his preserves—deep shadowed woods with margins of green meadowland, in which silvery rabbits, and long-tailed pheasants gorgeous in brown and gold, were free to roam in the sunshine—were the envy of every sportsman. For the summer visitor there was famous trout fishing in the little Taff that rippled so brightly under the very walls of the castle itself; while farther afield, on the Usk, there was salmon to be killed that enjoyed a repute second to none throughout the country. But surrounded as he was by so many delights and luxuries, it must not be supposed for an instant that Mr. Crawshay was only a fine-weather photographer. True, he spent much money in new lenses, novel apparatus, and studio improvements, but he was one of the hardest workers at the camera. His dark-room was his own proper sanctum, wherein he allowed no one to meddle. His baths, developers, and other agents were prepared by his hands alone, and to his assistants very little indeed was entrusted. Although himself *facile princeps*, he was nevertheless content to receive instruction and advice from others. During the visit of his photographic friends, it was the custom occasionally to institute a field-day, when those who made up the party would, one after another, try their hand at a plate; and it is no exaggeration to say that, although surrounded usually by masters of the art, Mr. Crawshay never failed to reach the common level. Landscape photography he especially loved, since it took him in the open air, and it was no uncommon thing for him to divide a day's excursion between his beloved camera and his salmon rod. In neither occupation was he reminded of his affliction, and hence he thoroughly enjoyed them. No man probably has derived so much gratification and pleasant occupation from photography as Mr. Crawshay, while there are few gentlemen amateurs to whom recent photography owes so much. That he has left his mark upon photographic art no one can gainsay, and there are not a few

among the readers of this journal who will ever retain pleasant reminiscences of Cyfarthfa Castle and the last of the iron kings.

ON THE PREPARATION OF THE PAPERS EMPLOYED IN CARBON PHOTOGRAPHY.

BY ADOLPHE OTT.*

Formerly Chemist in the Establishment of Braun & Co., Dornach, Upper Elsass.

THERE are certainly, however, other descriptions of gelatine which answer the purpose quite as well as those above mentioned. For instance, Dr. Eder† recommends as suitable for photographic purposes a gelatine which, when saturated with water, can be heated up to 30° C. without melting. Again, according to Mr. Cooper,‡ when mixtures of gelatine and chromic salts soon lose their sensitive property, it is due to the former substance having been prepared from bones, and being for that reason choudrinous. In any case of two kinds of gelatines the least soluble is to be preferred, because of the reticulation and graulation which so often—and more especially in warm weather—make their appearance.

For sensitizing, ordinary commercial potassium bichromate can be used with perfect confidence. As regards pigments, only those which are as permanent as possible should be selected. Carmine, for example, which was formerly much employed, must, on account of its liability to fade under the influence of light, be completely rejected. The colouring materials must also possess a certain specific gravity—that is, they must not be too heavy, or they will settle at the bottom of the mixture. Braun and Co. use by preference the following pigments:—Finest lampblack, sienna earth, umber, purpurin, alizarin, and Berlin blue, all ground very fine. We give below some formulae for papers with a photographic or reddish brown tone:—

A.—Lampblack	...	...	6 grammes
Burnt sienna	...	...	12 "
Raw sienna	...	...	4 "
Purpurin	...	...	8 "
Prussian blue	...	...	0.5 "
B.—Lampblack	...	...	5 "
Burnt sienna	...	...	10 "
Alizarin	...	...	10 "
Prussian blue	...	...	5 "
C.—Lampblack	...	...	5 "
Purpurin	...	...	10 "
Burnt sienna	...	...	15 "
Raw sienna	...	...	5 "
Prussian blue	...	...	0.5 "

In all the above the weights are calculated to one kilogramme.

The apparatus‡ for coating the paper is not at all complicated. In a vertically placed frame, about 1 metre wide and 2.5 metres high, are fixed, in a horizontal position, two rollers about 15 centim. in diameter, the upper and stronger one being made of polished wood, the lower one of metal. Underneath the latter is a semi-cylindrical trough, which stands over a water bath, and is intended to contain the gelatine mixture. The bath is kept at the proper temperature by passing steam into it. Both the rollers can be raised or lowered to any required extent, and when the apparatus is in use the lower roller is made just to touch the surface of the mixture. The paper, being out to the right size, is passed round the two rollers, and its ends fastened together with gum or paste. In order to keep it stretched a third roller is arranged between the two others on movable arms; this is allowed to rest against

the paper, and keeps it stretched by its weight. When, now, the upper roller is put in motion the paper band will skim the surface of the gelatine solution, and gets coated with an even layer of the latter. It is then cut through, and hung up to dry in a cool place where there is a current of air.

The preparation of the mixture is very simple. Put the gelatine to soak in three-quarters of the above given quantity of water until it is saturated, and dissolve the sugar in the other quarter; then add the glycerine and pigment, and filter repeatedly through linen. Now leave the mixture for some time over the hot-water bath, to allow the bubbles to rise, and filter once more, being careful to prevent the formation of bubbles, and it is ready for use. Of course the temperature must be so regulated that the mixture is neither too thick nor too thin. A strip of paper four metres long and eighty centimetres wide will take up about 300 grammes of gelatine. Paper which is prepared for sale is naturally not sensitized.

Double-tinted Papers.—Suppose we expose a negative—for instance, one of a statue—having a transparent (which is equivalent to a natural dark) background, and underneath it a piece of carbon paper with a couple of coloured films, the upper one of a sepia, the lower one of a purple colour. With a single transfer, the position of the films is inverted, and we have, then, since the action of the light in the background penetrates into the purple tinted layer, the picture of a statue of a light sepia colour on a so-called Pompeian background (sepia and purple give a red which has received this name). A picture of this kind has a very agreeable effect, and similar results may be attained with other combinations of colour. Quite a different matter is it when it is wished to copy a portrait or landscape in two colours. In this case great care must be taken in selecting the colours; it is best to use only such shades of colour as do not differ largely from each other—for instance, dark brown and sepia, purple and violet purple. We have in our possession some prints (for the most part representing Swiss costumes and landscapes in the Rousseau style) which Herr Braun produced ten years ago on paper of this kind. As the lower gelatinous layer showed a black, and the upper a sepia tint in the shadows, there is observed a remarkable depth, which could not have been realised by the use of a pure sepia coloured tint alone. For mountain and glacier views, also, a paper with more than one coloured layer may be employed with great advantage to reproduce the natural colours—as, for instance, when the lower layer has a dark sepia, the upper one a blue tint, &c.

2. *The Single Transfer Paper.*—This is used for negatives that are drawn off, and which, therefore, reproduce the picture in the correct position, or for copying objects in which it makes no difference whether the sides be reversed. The paper employed is that manufactured by Steinbach and Co. at Malmedy; a single sheet measures forty-five by forty-eight centimetres, and the quire costs 32s. No apparatus is necessary for this kind of paper, as it is merely necessary to pass two sheets, lying the one on the other, through the following mixture:—Dissolve half a kilogramme of Arnette's, or some other kind of perfectly colourless, gelatine in ten litres of water; add thirty-five grammes of chrome alum, and mix this solution, while hot, with one litre of a concentrated solution of white shellac in borax. This mixture is to be used warm, in order that none of the shellac may be precipitated.

3. *The Developing Paper.*—This is used in all cases where an ordinary negative is employed. The picture then appears reversed on the developing paper, and, to be corrected, must be transferred once more. Of this paper two kinds can be obtained commercially: the first is coated with caoutchouc, the second is waxed. A very excellent kind is sold by the Autotype Company, London, under the name of "flexible support," but the author is not acquainted with the method of its preparation.

* Concluded from p. 274.

† PHOTOGRAPHIC NEWS, 1878, p. 173.

‡ A. Martin, *Handbuch der Email-photographie*, p. 247.

§ A description and illustration of this apparatus will be found in the PHOTOGRAPHIC NEWS, 1878, p. 451.

The waxed paper is prepared by passing a sponge dipped in a solution of shellac wax* over ordinary single transfer paper, and then leaving it to dry. The caoutchouc paper is produced at Dornach, in rolls, by means of the apparatus above described. For this purpose, Malmédy paper of 137 centimetres width is used; a roll of this paper weighs 53 kilogrammes, and costs £14. These rolls are cut into sheets 4 metres long, and either 80 centimetres or 57 centimetres wide, and are coated with a clear solution of 4 kilogrammes caoutchouc and 500 grammes of gum-damar in 75 kilogrammes of pure benzole. One of the larger sheets takes up 319 grammes of the solution, and one of the smaller ones 210 grammes.

4. *The Double Transfer Paper.*—For the preparation of this a cheaper kind of paper, manufactured by Rives, is used; its size is 44 by 56 centimetres, and its price 15s. the ream. It is dipped in the following solution:—

Water	10 litres
Gelatine (Arnette's)...	1 kilogramme
Common alum	300 grammes
Barium sulphate	300 "
Glycerine	50 "

At the time of writing, besides Brann and Co., Monckhoven (of Ghent), Marion and Liebert (of Paris), the Autotype Company (of London), two other smaller French and English firms are manufacturers of carbon papers. As carbon photography is rapidly being extended it is to be hoped that the number of manufacturing houses will also increase.

THE ASPHALTUM PROCESS MADE PRACTICABLE.

BY ADOLPH OTT.

EVERY photographer who has occupied himself with heliography knows why the asphaltum process, discovered by Nicéphore Niepce, has not found a wider application. It is the low degree of sensibility of the material in question, a degree which requires from one to two hours' exposure in the sun, and even more. Professor Husnik, the learned author of *Die Heliographie* (Vienna, 1878) informs us that the proprietor of perhaps the largest photo-zincographic establishment in the world (Gillot, in Paris) makes use of asphaltum as a photogenic substance, which, he says, he found exceedingly sensible; and Professor Rodrigues, the chief of the photographic section of the kingdom of Portugal, says that he does not expose longer than from fifteen to twenty-five minutes. While Husnik does not give us any idea of Mr. Gillot's secret, Professor Rodrigues asserts that the bitumen he himself employs is very hard, with a high melting point, and almost totally soluble in distilled petroleum, distilling between 80° and 110° C. According to him, the solvent should first be freed from every trace of water by treating it with chloride of calcium; and he gives the following formula for the photogenic layer:—

Common benzine	100 grammes
Lavender oil	3 "
Bitumen of Judea	8 "

Now we know that there are various kinds of asphaltum of different degrees of photogenic power, as I might call it; the Syria asphaltum is in this respect one of the most preferable. But even one and the same kind shows sometimes different degrees of sensibility, and most probably Professor Rodrigues had the good luck of having a superior "brand" at his disposal. Quite recently a Swiss photographer, Mr. F. Flanser, in Naefels, Canton Glarus, has discovered a method of improving any kind of bitumen by removing from it the

non-photogenic substance. This he does by means of a solvent, which, however, I am at this instant not able to disclose. All that I can say is, that he reduces the time of exposure to fifteen or twenty minutes. The process seems to be perfectly practical, for it is made use of by two large publishing firms, Orell Füssli and Co., in Zürich, and the Brothers Benziger, at Einsiedeln. The results are of an exquisite, I might say microscopic, minuteness, and far outdo the "Aubel-druck" (Aubel-printing method), a process practised in Cologne, of which you find proofs in Dr. Stein's large work, *Das Licht in Dienste der Wissenschaft*. I enclose you, Mr. Editor, a specimen obtained in this city, and hope soon to be able to forward you a whole collection. Thus far difficulties were experienced in covering large plates, which nearly always are zinc plates; this difficulty has also been overcome. The development is accomplished by means of turpentine. Every experimentalist asserts that by no etching method are so fine results to be obtained, and that no etching process is so easy and quick, as that in which asphaltum is the photogenic substratum, and we therefore can look forward with greater hopes than ever before that the application of this bituminous substance will be greatly increased. Reversed negatives are necessary if the zinc is to be used as printing plate, but if from this latter a print on lithographic stone is required, an ordinary negative will do. I might here recall an observation of Niepce to your mind, that is, if a solution of asphaltum in a half-filled and loosely corked bottle be exposed to sun-light for one hour, or to diffused light to from five to six hours, a higher degree of sensibility is procured. McPherson extracts the resin in question first with ether.

Prof. Rodrigues, in his book, "*La section photographique et artistique de la direction generale des travaux geographiques du Portugal*" (page 54) describes several processes for producing a grain by means of the asphaltum method. One of them consists in covering the photogenic substratum with a very thin alcoholic varnish, and, while yet sticky, by sifting thereon fine plumbago powder, which operation, however, should be done by means of a special contrivance. On slightly beating the zinc, the powder will remain on the varnish. After insolation, the plate is washed with alcohol, which dissolves the covering in removing the plumbago. The grain is formed by a multitude of small holes produced by the opacity of the powder. After this the image is developed as ordinarily.

Probably the treatise of Niépce de St. Victor, "*Traité pratique de la gravure heliographique*" (1856) will now anew be consulted.

Höttingen, near Zurich.

OXYGEN IN THE SUN.*

At the meeting of the Royal Astronomical Society on Friday, the 13th inst., Professor Henry Draper, the distinguished American physicist (son of Professor J. W. Draper, whose work on the "History of Intellectual Development of Europe" has caused many to forget his earlier scientific successes), brought before an audience of English astronomers and physicists the evidence by which he appears to have demonstrated that oxygen exists in the sun. It will be remembered that when, in 1859, Kirchhoff showed how the dark lines of the solar spectrum enable us to analyze the vaporous envelope of the great central luminary of our system, the substances the presence of which was recognized belonged, with one exception, to the family of metallic elements. Iron, zinc, copper, aluminium, sodium, magnesium, cobalt, nickel, calcium, chromium, titanium, and manganese were found to be present in the sun. Besides these metals, hydrogen was recognized. It is doubtful whether even hydrogen ought not to be included among the metallic elements. In that case hydrogen would be regarded as a

* The sweet smelling wax which separates on the surface when shellac is melted in hot water.

* Condensed from the *Times*.

metal which at ordinary temperatures is in the gaseous form, precisely as mercury is at ordinary temperatures a fluid metal. Adopting this, which is probably the correct view, we may say that all the elements the presence of which in the sun had been determined by dark lines—that is, by absent, or rather by relatively feeble tints—in the solar spectrum are metallic. The absence of all evidence respecting some of the other elements might not have seemed remarkable, because it might well be believed that they were present in quantities relatively so small that our means of analyzing the sun failed to detect these substances. But that such elements as oxygen, nitrogen, and carbon, which are such important constituents of our earth, should be absent from the sun, or should not be present in quantities large enough to make their detection easy, seemed surprising. If oxygen were present in very great quantities in the sun, but always lay below the visible solar surface, and was at a higher temperature than that prevailing at the surface, then oxygen might indicate its presence by its bright lines, and could certainly indicate it in no other way. Now, it is evidence of precisely this kind that Professor Draper seems to have obtained respecting this most important element. He had been engaged since 1863 in obtaining simultaneous photographs of parts of the solar spectrum and of corresponding parts of the spectra of hydrogen, nitrogen, and carbon. In examining a series of such photographs, in which the fluted spectrum of nitrogen was in juxtaposition with the solar spectrum, he found reason to suspect that some of the bright lines of nitrogen agreed exactly in position with bright bands in the spectrum of the sun. Pursuing his researches, he found, even at that early stage of his labours, very striking evidence of agreement between the bright lines of oxygen and solar bright bands. It was not, however, till the year 1877 that he was so far satisfied as to announce “the discovery of oxygen in the sun.” The paper thus named was illustrated by enlarged views of the negatives he had obtained. So that, in point of fact, the reader was provided with the very evidence which had satisfied Professor Draper. He did not merely send pictures of what he had seen, but the observations themselves, seeing that the photographs remained precisely as nature had left them, save only for a few reference lines and letters added round the margin to make them intelligible. In these photographs a part of the spectrum of the sun was seen side by side with the bright-line spectrum of air. The bright lines of iron were shown in company with those of air, in order to indicate the exact agreement of the juxtaposed spectra by the coincidence of the iron bright lines with the corresponding solar dark lines. Every one of the oxygen bright lines was seen to coincide with a bright part of the solar spectrum. In some cases the coincidence was very striking, because the bright line of the air spectrum not only agreed exactly in position, but very closely in character also, with a bright band in the solar spectrum. This close resemblance could not in every case be recognized—a circumstance by no means surprising when we remember that if these bright bands in the solar spectrum are really due to the presence of great quantities of oxygen below the visible solar surface, the light of this oxygen can only reach us after passing through the cooler envelope of metallic vapours which produces the dark lines, and must be affected by the absorptive action of those vapours, which, of course, was not the case with the oxygen of the air from which Professor Draper obtained the bright-line comparison spectrum.

Many experienced spectroscopists remained unconvinced by the evidence which Professor Draper thus advanced in 1877. They considered that the dispersive power of his spectroscopic battery was not sufficient to place beyond question the coincidences on which he based his conclusions. Other objections also were advanced which need not here be dwelt upon. In the true scientific spirit, Professor Draper set to work to apply more searching tests to his result. The scale of his enlarged photographs had been half that of Angstrom's well-known normal spectrum. Those which he

exhibited last Friday at the Astronomical Society were on a scale four times greater. The evidence derived from each coincidence was thus increased fourfold in value, the evidence from two coincidences, sixteenfold; from three, sixty-fourfold; and from the eighteen recognized coincidences, about 68,725,000,000 times. He effected also an improvement likely to have great value in other spectroscopic researches. The electric spark through air which gave the air spectrum pursued a zigzag course, like a lightning-flash on a small scale. He wanted a straight flash, or at any rate a flat flash, so that seen from one direction it should appear as a straight line. So he invented what he calls the spark compressor. The terminals between which the spark passes are introduced into a small block of soapstone, and between them a small flat aperture is prepared, between the walls of which the electric flash has to travel. This space is left open on one side, somewhat like the slit of a money-box, and the spark seen from that side necessarily appears as a straight line, though it may have a considerable amount of zigzag play in the plane of the flat space left for its passage. The result of this arrangement is that the spectrum of the air lines (oxygen and nitrogen), as also of the iron lines (obtained by having a little iron at one of the poles), is much better defined and more trustworthy than it had been before this plan was adopted.

TRANSPARENCIES AND LANTERNS.

BY J. TRAILL TAYLOR.*

I ELABORATE, by special request, one or two thoughts thrown out by me in the course of my desultory remarks at the last meeting of the Photographic Section of the American Institute.

Those who were present on that occasion will remember that the expected proceedings—an address on the construction and uses of the magic lantern, by myself, to be followed by an exhibition of photographic transparencies of a somewhat representative type—were nearly made of non-effect by the inadvertence of the committee, who had failed to apprise me, of all others, of the fact that my services were required, until the meeting had been called to order. Under such circumstances, my remarks were of a more discursive nature than would have been the case if I had only had a day's notice of the part that I was expected to play. That any exhibition at all took place was owing to the fact that my lanterns are always kept in a state of readiness, and were in the vicinity of the room in which the meeting was held.

For such purposes as the exhibition of photographic transparencies to a party of from fifty to a hundred individuals, I entertain a strong conviction of the great advantages possessed by an oil lamp over the lime-light. I have tried both sources of illumination frequently, and recommend the oil on account of its greater simplicity, readiness, and the feeling of general comfort it induces. The last of these qualities will be best appreciated by those who have witnessed an oxyhydrogen explosion.

The intensity of the one kind of illumination far exceeds that of the other. But what I here contend for is this: that if the disk be confined to small dimensions, such as six feet, the illumination is quite sufficient to enable photographs to be seen with a due degree of brilliancy, and in every detail. The lantern by which I sought to demonstrate this was of English manufacture, a slight departure from the excellent Marcy sciopticon, which instrument (thanks to Mr. W. B. Woodbury who introduced it into Europe) has entirely revolutionized the lantern manufacture. Marcy's lantern possesses two straight wicks, placed in the direction of the axes of the optical system of the lantern; that used by me has three. The desirableness of getting the cumbrous oxyhydrogen lime-light supplanted

* *Photographic Times.*

by one possessing a greater degree of simplicity is so great that those interested should lose no opportunity of comparing one lamp with another, in order to ascertain which principle of construction is the best, and then to see in what manner that principle can best be given effect to. No photographic society should be without its lantern; and a few minutes of each meeting devoted to the exhibition of such transparencies as the members choose to bring with them, would be both pleasant and profitable. A well-constructed oil lantern (I use *kerosene*) may be always kept in a state of readiness, so that all that is necessary, when its services are required, is to strike a match; and in the course of two minutes the exhibition is being proceeded with.

With regard to the transparencies: if a grey tone be not objected to, they may advantageously be made by means of the camera and wet collodion. A pleasing warm, rich tone may be imparted by bichloride of mercury, followed by sulphide of ammonium very much diluted; but such a method of toning ought never to be had recourse to if the transparencies are intended to be kept for any length of time. I have in my possession pictures toned by mercury, which have faded to such an extent as to render it difficult to discover what the subject is, and this notwithstanding their having been well varnished. Platinum, palladium, or gold form excellent and durable toning agents for transparencies; but the tones are somewhat cold. There is no toning solution extant that can equal uranium, when properly prepared. It imparts a rich, warm bloom to the coldest picture, and, if I am justified in speaking of permanence from a twelve years' standpoint, I can strongly attest the permanence of pictures toned by the salts of this metal; and at the meeting, to which allusion has been made, opinions corroborating my own in this report were freely expressed.

Much as I have worked with bromised collodion emulsion, I have never yet been able to satisfy myself that it produces transparencies of a quality to equal those which may be prepared by other dry methods, *e.g.* the coffee process, and acid (not alkaline) development. An old collodion and acid bath, with copious washing of the plate, followed by immersion in a strong infusion of coffee, provide surfaces that, when dry, will yield magnificent transparencies, provided that an acid pyro. developer be employed. The proportion of silver added to the developer should not exceed one drop of a thirty-grain solution for each picture until the whole of the details are out, when more may be added to impart vigour. The developer contains citric acid in the proportion of two to every three grains of pyrogallie acid. The image should be fixed by cyanide of potassium, and it is advantageous that the old developer, which should have been reserved for the purpose, be reapplied to the plate for a short time. This imparts great richness and warmth to the tones.

There are many occasions when only one transparency is required from a subject; for example, a copy of an engraving to illustrate a lecture. The expense and trouble of taking a negative expressly for this one picture may be saved by making use of a bromised emulsion, such as Newton's, exposing and developing as for a negative, and taking special care to employ alkaline pyro. development. When the whole details are out, let the plates be subjected to the action of dilute nitric acid, by which the silver that forms the opaque parts of the image will be dissolved out. This causes a transformation of the negative into a transparency of singular delicacy and beauty; all that is required to impart vigour to it being a rinsing in water, to remove all the acid, followed by an application (in the light) of the same alkaline pyro. solution by which it was originally developed.

Several of the transparencies exhibited at the meeting of the American Institute by me were prepared in the manner described, which also forms an excellent and sim-

ple method of printing (by superposition) a transparency from a transparency, or a negative from a negative, by one operation.

A LIGHTNING PROCESS.

At a recent meeting of the Chicago Photographic Society details were read by the Secretary of a rapid process, alleged to be the "lightning process." The letter was communicated by a correspondent. The first formula was a Lambert formula.

"Bath, 40 to 45 grains strong; to 4 ounces of solution add half an ounce of a fresh 25-grain solution of cyanide said to be of potassium.

"Collodion.

Ether	...	...	...	2 ounces
Alcohol	...	...	...	1 ounce
Double iodide of cadmium and potassa	...	...	...	6 grains
Iodide of ammonium	...	...	...	4 "
Iodide of cadmium	...	...	...	4 "
Bromide of cadmium	...	...	...	4 "
Gum guaiacum	...	...	...	2 "
Chloride of calcium, C.P.	...	...	...	3 "

"Developer.

Water	...	...	...	16 ounces
Sulphate of copper	...	...	...	1½ ounce
Sugar	...	...	...	1 "
Saturated solution of double sulphate of iron and ammonia	...	10 to 15 drops		
Alcohol	...	...	...	1 ounce
Acetic acid	...	...	...	1 "
Pyrogallie acid solution (5 grains to ounce of water)	...	...	...	½ "

"Continuator.

Pyrogallie acid	...	...	...	10 grains
Bromide of potassa	...	...	...	5 "
Water	...	...	...	1 ounce

"Intensifier.

Water	...	...	...	4 ounces
Tincture of iodine	...	...	...	1 drachm
Alcohol	...	...	...	½ ounce

"A developer giving better details than the Lambert, to be used with ordinary chemicals:—

Water	...	...	...	16 ounces
Sulphate of iron	...	...	...	1 ounce
Epsom salts	...	...	...	1 "
Coffee	...	...	...	½ "
Formic acid	...	...	...	1 drachm
Alcohol	...	...	...	1 ounce
Acetic acid	...	...	...	½ "

Dissolve the iron and other salts in the water, soak the coffee in the solution five minutes, and add the other ingredients.

"Another developer [this is astounding!]:—

Formic acid, ether, and alcohol	...	...	...	½ ounce each
Iodide of ammonium	...	...	...	20 grains
Iodide of cadmium	...	...	...	20 "
Iodide of potassium	...	...	...	15 "
Nitric acid, C.P.	...	...	...	1 ounce
Water	...	...	...	2 ounces

Neutralize with bicarbonate of soda, about a teaspoonful; add until dark precipitate forms; let stand in a warm place over night, and filter.

"This last developer, when rightly made, works quicker than the ordinary, but is apt to work harsh.

"A member remarking on the singular combinations, the Secretary stated that he read them more as a contribution to the curious things in photography, than from any supposed virtue or wonderful properties."

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STREAKS IN THE DIRECTION OF THE DIP.

SINCE the approach of the summer season and the occasional warm days which have been experienced, we have received many complaints of streaks in the direction of the dip in negatives. The advent of hot weather commonly brings increased tendency to many photographic troubles, especially in the nature of stains and fog, rendering increased care in all manipulations necessary. The plates should be especially clean, and the fingers should be kept as cool and clean as possible. The bath should be surrounded by a wet cloth. The plate-holders in the dark slide should be kept especially clean. And, in fact, cleanliness and precision should distinguish every operation.

Streaks in the direction of the dip, which constitute the defect under our immediate attention, often proceed from various causes; but there is one common cause, which, judging from recently received complaints, appears to be little understood. Not only from inexperienced photographers, but from old hands, we have received complaints of streaks in the direction of the dip of a foggy nature, the foggy deposit being loose and powdery, and easily removed from the surface of the negative by a touch; but when removed, showing a dark or transparent stain where there had been a light opaque one. One correspondent, who claims ten years' experience, remarks that, whenever he has occasion to replenish his bath, after it has got low by constant working, he is troubled by these streaks, and that although he has tried all he knows, he is not able to prevent this defect, which disappears generally after immersing about a dozen plates in the solution. But he thinks a dozen negatives too many to spoil every time his bath requires replenishing! We think so too! And as the cure is simple and certain, neither he nor others need spoil any more negatives from that cause. If those of our readers so troubled will examine the surface of the solution when the streaks in question appear, they will notice that it is covered with a thin dark, greasy-looking scum, appearing iridescent when examined at different points of sight. This scum, or a portion of it, adheres to the surface of every plate immersed while it is there, and causes the foggy, pulverulent streaks on the surface of the negative. The remedy is very simple: it consists either in preventing the scum from forming on the surface of the solution, or in removing it before immersing a plate. The scum is caused by the dry deposit on the sides of the bath, floating on the surface when the level of the nitrate solution is raised by replenishing from a stock bottle. If, before replenishing, the solution be removed from the bath, which is then washed out and sufficient solution carefully filtered in, no

scum will be found on the surface. When it is found there, however, it is easily removed by drawing a strip of clean blotting-paper over the surface of the solution. The floating scum will adhere to this, and if repeated once or twice it will be entirely removed, and an end made of the streaks.

This is the most common and the most frequently overlooked cause of these streaks. But there are others, not always so easy to trace or to remove. They sometimes arise from the use of a very old solution, and can only be got rid of by trying a fresh solution of nitrate of silver; sometimes from the immersion of the plate too soon, before the bulk of the ether has escaped from the film. A good remedy in many cases consists in keeping the plate in lateral motion from the moment it is immersed in the bath. In some cases we have known it arise from the use of an over-iodized collodion, and its removal was then effected by adding a little plain collodion to the iodized stock in use.

An inexperienced operator recently sent us half-a-dozen plates, each of which had a stain or streak from one corner of the plate. He was much puzzled as to the cause, and was disposed to think some defect in the camera or lens was to be suspected. On enquiry, we found that he never used a plate-holder, but held the plate in his fingers, in all operations, by the corner at which the stain occurred. The stain was simply caused by the free silver on the plate and the developing solution coming into contact with the dirty finger and thumb which held the plate! Such a cause does not often come into operation, we hope, but this illustrated a possibility worth naming, but certainly to be avoided.

FRENCH CORRESPONDENCE.

PHOTOTYPE AT THE MEETING OF THE PHOTOGRAPHIC SOCIETY OF FRANCE—THE PLATINOTYPE PROCESS IN FRANCE—PROFESSOR STEBBING'S GELATINO-BROMIDE—PHOTOGRAPHY BY THE ELECTRIC LIGHT—PHOTOGRAPHY APPLIED TO ARCHEOLOGY—THE AUTHOR OFFERS TO BE OF ANY SERVICE TO THE SUBSCRIBERS OF THE PHOTOGRAPHIC NEWS.

Print Exhibited by the Autotype Company.—The meeting of the Photographic Society of France held on the 6th of June last was far from being so important a one as its predecessor. Probably, however, the readers of the PHOTOGRAPHIC NEWS have already learned what took place on that occasion from the letter of my honourable colleague, who, in alternation with me, fills this space in your weekly issue. However that may be, I cannot but say some words in praise of the beautiful collotype print exhibited at that meeting by Messrs. Sawyer and Co., of London. I have already on a previous occasion expressed my admiration of the splendid works in phototype executed by the Autotype Company; but never before have I seen one of so large a size. Those who, like myself, believe that the whole future of the process of obtaining positive prints from photographic negatives rests with that of phototypy, will join me in congratulating the Autotype Company on the excellent progress which they continue to make in the same path. No doubt the carbon process is highly esteemed, for the services it has rendered are very great; at the same time, its application is limited, on account of its permitting only a small number of copies of the same subject to be taken. On the other hand, the process of phototypy is the one most capable of being worked on a large scale commercially, because of the large number of photographic prints which can be drawn. It is scarcely possible to compare with it the Woodburytype process, by which prints cannot be obtained under similar conditions; besides, the impossibility of using the Woodburytype for direct printing on the paper itself, and with white margins, is one of

the most serious obstacles in the way of working this ingenious process for the illustration of books. Even the mounting of these prints (which is rendered necessary by their constitution) deters editors from employing the Woodburytype process, though it is so obvious and remarkable; they prefer that of phototypie. Some very successful prints, also by this latter process, were shown at the same meeting by M. Frisch, of Berlin.

The Platinotype Process in France.—I can also scarcely pass by in silence, though it may already have been mentioned, the double and doubly interesting exhibition of Professor Stebbing at the same meeting, namely, prints in platinum by the process of Mr. Willis, and some new negatives in gelatino-bromide. This was, undoubtedly, the great feature of the meeting to which I have been alluding. As regards photography in the salts of platinum, M. Stebbing announced that a company for working Mr. Willis's process has been positively constituted in Paris, and he showed a very fine collection of copies printed by this process, which is certainly a permanent one. His communication, difficult as it may be to give credit to the statement, was not received with that attention it most assuredly deserves, for only a minority of the members present appeared to take any interest in it. There were some at the very outset who were not inclined to admit that the permanence of platinotype prints is thoroughly demonstrated; we can only know that for certain, they said, at the end of a hundred years. The want of faith appears to me to be very much like the wish which is father to the thought, considering the actual opportunities offered by science for proving the question. Where such a doubt exists, is it not easy, by a host of well-known devices, to demonstrate the more or less permanent character of the images under consideration? I have myself submitted platinum photographs to the most violent treatment, and have found that they will resist the action of the strongest acids. Now the same can scarcely be said of silver prints on albumenized paper, for even when they are highly intensified with gold, we know they will give way at once under a similar treatment. Besides, the image either is, or is not, formed by reduced platinum incorporated with the substance of the paper. If it be really platinum, why should this body, whose character for permanence is so well established, suddenly become unstable? Can it be objected that its highly subdivided condition has caused it to lose its fixedness? But if this be true, we should soon have a proof of it on submitting these prints to a rapidly and energetically destructive action. Now, as a matter of fact, no change takes place when experiments of this kind have been tried. In my opinion the test of time is not necessary; it is enough to prove that the image is really formed in platinum, and this proof has been established. Another objection to the Willis process caught my ear: *It is so cold!* Now it is quite true that platinum pictures have not that peculiar warmth arising from the bistre or chocolate tinge resulting from the salts of silver; they are rather of a slate-grey colour, and there are cases when a warmer tone would be more effective. But it is a question rather of artistic taste, and very much of custom. When photography was first introduced, what outcries there were against the peculiar colour! Numberless attempts were made even to give silver prints a black or grey colour. But now that a process exists for producing this neutral colour, and one that is well adapted for all kinds of reproductions, one of the first objections raised to it is that which ought to count as one of its principal advantages. If black be so cold, why is it not taken exception to in lithographic and typographic engravings? In some eyes, photographs ought to have a photographic colour, and for this reason the greater number of prints produced by the processes of phototypie or of Woodburytype are executed in chocolate coloured ink, so that the public may be satisfied that they are the results of photographic work. But this objection founded on the cold-

ness of platinum photographs is not an important one. There is nothing to prevent the process from being effectively used for the reproduction of objects of archæology, natural history, or palæontology, where the aim is to obtain permanent and faithful copies of such objects, rather than works of art. As regards platinotype portraits and landscapes, they are far from being displeasing; on the contrary, they have an agreeable effect. But we must not wrangle about their peculiar tone, any more than we can dispute about tastes and colours. The whole question has in certain quarters, not without some amusement, been made a question of *climate*. "It is all very well for you English," it is said, "who are already habituated to cold tones; but we Freuchmen, and more especially Frenchmen of the South, must have colours which harmonize with our bright sun and our warm-toned surroundings." Now this is again a kind of inroad into the domain of art: it is like a comparison of the Venetian with the English or Flemish schools. Paul Veronese would have disowned platinum, while Van Dyck would have retained it. But this is not serious; with the affairs of a chemical process, of a mechanical reproduction, of the permanence of results, high art and dilettantism have nothing to do; for them it is a question of individual taste, while we are treating of facts and truths which, having been demonstrated, are the common property of all. The platinum process, it is true, is not likely to supersede phototypie, for its employment is limited to the reproduction of a small number of copies of the same subject. This is also an advantage, because the greater part of his time a photographer is only required to produce a few copies of one subject, and henceforward, when he wishes to give those copies a permanent character, he will have the choice between the carbon and the platinum processes. There is, therefore, plenty of room for employing this beautiful method of photographic printing; it is one, too, which possesses the additional advantage of being four times as rapid as that with the salts of silver.

Professor Stebbing's Gelatino-Bromide.—As regards gelatino-bromide, it would almost have dropped out of notice at the meeting, had it not been for the exhibition by M. Stebbing of some new, nearly instantaneous, negatives, and of the positives taken from them. The expressions of approval with which the members present—and more especially Messrs. Davanne, Bardy, and Ferrier—received M. Stebbing's communications on the value of a sensitive film of gelatino-bromide, are a sure proof that this skilful operator has succeeded in producing plates of constant quality and easy manipulation. In order to avoid subsequent action of the silver on the gelatino-bromide negatives, after they have been exposed to the light, M. Stebbing removes this agent of decomposition during the intensification; and this is how he effects his object:—The negative is immersed in a saturated solution of mercury bichloride, where it remains as long as may be necessary to produce the required degree of intensity; it is then thoroughly washed, and placed in a bath consisting of 200 cub. centimetres of water to which a very small quantity of a dilute solution of pyrogallol acid has been added. To this are then added 2 cub. centimetres of a solution of 20 per cent. of ammonium carbonate and 5 per cent. of potassium bromide. The whole is well shaken, and the plate placed in it, when the negative will be visibly intensified.

Photography by the Electric Light.—Talking of gelatino-bromide calls to mind—why it does so, I will explain directly—the charitable fête arranged at the Opera House by the managers of the *Figaro* for the benefit of the sufferers by the Szegedin inundations. At this fête photography played a prominent part, and contributed not a little to its pecuniary success, thanks to the disinterestedness and the management of M. Pierre Petit, one of the best-known of our Paris photographers. As the fête was held between the hours of nine in the evening and two in the morning,

it is scarcely necessary to say that the photographs were taken by aid of the electric light. One of the proscenium boxes of the opera was fitted up as a boudoir, draped in white and blue, and the strong light produced by the electric current was so diffused over the light and soft colours of this small space as to produce the effect of clear sunlight. Forty-one negatives were here taken one after the other. The precipitation with which work of this kind must be got through, in the midst of such a continually moving crowd as is sure to be met with in a fête, can scarcely be imagined. I have seen the whole of these negatives, and was struck with the comparative beauty and delicacy they exhibit, considering the exceptional circumstances under which they are taken. Sitters succeeded each other almost without interruption, and to the other inconveniences to which the operators were subject was added the public curiosity, which was naturally vividly excited by the novelty of the sight. My own absence from Paris prevented me, I regret to say, from offering any advice on the subject of the arrangement of this photographic department of the fête; if I had had the opportunity, I should have recommended M. Pierre Petit to try gelatino-bromide plates, which would have enabled him to reduce the length of exposure from ten seconds (which was the time he occupied) to less than one second. By this means he could have operated almost instantaneously, and if it be a real *tour de force* to have taken at one evening séance forty-one fine negatives, he could easily have quadrupled that number by the employment of gelatino-bromide. This process is still too new among us for him to have entertained the idea of having recourse to it on this occasion, but it would have been an excellent opportunity of trying it, and if another similar one should arise we must endeavour, if possible, not to let it escape. This experience at the Opera shows once again how numerous and varied are the applications of photography; We have still much to do before this marvellous discovery shall have said its last word, if, indeed, that day should ever arrive.

Photography Applied to Archaeology.—The firm of Gauthier-Villars has just published a new photographic work with the principal title, "La Photographie Appliquée à l'Archéologie," and the secondary title, "Reproduction des Monuments, Œuvres d'Art, Mobilier, Inscriptions, Manuscrits." The author is M. Eugene Trutat, Curator of the National History Museum at Toulouse. This highly interesting work is illustrated by some well-executed specimens of phototypie, executed by M. Quinsac, of Toulouse; it is another successful addition to the list of photographic works of whose publication M. Gauthier-Villars seems to have the monopoly. From the same house some new editions will also shortly be issued, and notably that of my own work on phototypie, which is just ready for the press.

Offer of my Own Services.—Several letters which I have received from many parts of England make me think that certain information which I am in a position to give, as well as my own humble advice, may be of use to those of my fellow-workers who read the PHOTOGRAPHIC NEWS. I have no hesitation in stating here publicly that my services are completely at the disposal of such of your readers as may be inclined to avail themselves of them; they will find on my part ready and prompt assistance in all cases where any special information I can give, or where my peculiar relations, can be of any service. I am anxious that the Editor of the PHOTOGRAPHIC NEWS may not only supply his subscribers with accurate and painstaking correspondence, but also that the Correspondent himself should, if I may be pardoned for saying so, be willing and obliging to the extent of his ability.

LEON VIDAL.

FORMULÆ OF PYROXYLINE.

BY DR. GUIDO WOLFRAM.

WE are favoured by Dr. Wolfram with some comments and corrections of the statement of his investigations in nitrate of cellulose, as recorded in *Dingler's Journal*, which appeared in our issue of the 20th ult. He says:—

"As a reader of the PHOTOGRAPHIC NEWS I find in No. 1082, May 30, 1879, a report of my paper upon investigations of pyroxyline, which had appeared in *Dingler's Journal*. I cannot understand where your contributor has found in my paper the statement that there was 'only one real nitro-cellulose, and that should contain 41.89 per cent. NO_2 , or nitric oxide,' and if the pyroxyline 'contains less than 41.89 per cent. of NO_2 , then the conversion of the cotton is not complete, and there will be found mixed with the gun-cotton a certain proportion of non-nitrated cellulose.'

"On page 8 and 19 of my paper, I say there are four kinds of pyroxyline—

1. $\text{C}_{12} \text{H}_{15} (\text{NO}_2)_3 \text{O}_{10}$ penta-nitro-cellulose.
2. $\text{C}_{12} \text{H}_{16} (\text{NO}_2)_4 \text{O}_{10}$ tetra-nitro-cellulose.
3. $\text{C}_{12} \text{H}_{17} (\text{NO}_2)_3 \text{O}_{10}$ tri-nitro-cellulose.
4. $\text{C}_{12} \text{H}_{18} (\text{NO}_2)_2 \text{O}_{10}$ di-nitro-cellulose.

The 1 contains 41.89; the 2, 36.50; the 3, 30.06; the 4, 22.22 per cent. of NO_2 . NO_2 does not signify nitric oxide, but *hypo-nitric acid*. $\text{N}=14$, $\text{O}=16$.

"The old formula of cellulose is $\text{C}_{12} \text{H}_{10} \text{O}_{10}$, $\text{C}=6$, $\text{H}=1$, $\text{O}=8$; the new formula, $\text{C}_6 \text{H}_5 \text{O}_5$, $\text{C}=12$, $\text{H}=1$, $\text{O}=16$. After the old formula the gun cotton or tri-nitro-cellulose is $\text{C}_{12} \text{H}_7 \text{O}_{10} (\text{NO}_2)_3$; after the new one, $\text{C}_6 \text{H}_7 \text{O}_5 (\text{NO}_2)_3$, and the photographic pyroxyline or di-nitro-cellulose, $\text{C}_{12} \text{H}_8 \text{O}_{10} (\text{NO}_2)_2$ and $\text{C}_6 \text{H}_8 \text{O}_5 (\text{NO}_2)_2$. I have not found in the guncotton as much hypo-nitric acid as corresponds to the formula of tri-nitro-cellulose, but exactly the half between that and di-nitro-cellulose; therefore I doubled the new formula, and named the insoluble military guncotton penta-nitro-cellulose.

"Tetra-nitro-cellulose is the photographic pyroxyline, and wholly soluble in alcohol and ether.

"Tri-nitro-cellulose and di-nitro-cellulose can be produced by treatment of cotton with dilute acids, and only the last, which should not be confounded with the former di-nitro-cellulose, contains often non-nitrated cellulose or unconverted cotton, because it is the lowest form of pyroxyline; but this mass is never soluble in alcohol and ether.

"A soluble pyroxyline, produced with strong acids in a short time (only a few minutes), often contains a small quantity of penta-nitro-cellulose, which is soluble in alcohol and ether, and cannot be separated by any solvent from the tetra-nitro-cellulose.

"Dilute acids and a high temperature give a pyroxyline of pulverulent character, that contains more or less tri-nitro-cellulose.

"I hope, sir, you will find space for this reply in the PHOTOGRAPHIC NEWS.—I am, yours respectfully,

"Dresden, June 6th. "DR. PHIL. GUIDO WOLFRAM."

CHANGING APPARATUS FOR DRY PLATES.

BY MAJOR W. L. NOVERRE.

Now that dry plates are likely to be more than ever popular, if even they do not altogether supersede wet collodion, a consideration of the apparatus available for changing the plates may be of use to some photographers, especially to those in India and the Colonies, who have not access to the shops of our apparatus makers.

Those who have portable dark tents and developing boxes may use them for changing their plates in the field. As the gelatine plate takes so short a time to develop,

some may prefer to develop their plates in the field, and so make sure of obtaining a satisfactory negative; especially will this be an inducement with beginners at the process, who are uncertain about the exposure under varying circumstances, or when the importance of obtaining a perfect negative at once overweighs the trouble and expense of taking the tent and chemicals to the field; for travellers, too, in many cases, both in Europe and abroad, the tent for development on the spot will be useful, because the operation of developing and washing can not always be carried on in a friend's house, or in an hotel.

Additional care in the case of gelatine plates, as compared with collodion, must be taken that all light is excluded, and the window should be provided with one thickness of the best ruby glass, and a second window of the same material should be arranged to slide up when required, so as to have a single thickness for working in a dull light, and two thicknesses when working in sunlight.

A changing apparatus may be dispensed with by carrying the sensitive plates in dark slides, which are constructed for the purpose, to carry two plates, back to back, in each slide; these are perfectly efficient, tolerably portable, and the least troublesome. A double slide is three-quarters of an inch in thickness, so that six slides, which will contain twelve plates, have a thickness of four and a-half inches, being a little more than the thickness of an ordinary one dozen plate box; these slides are, however, expensive, costing thirty shillings each for plates 10 by 8 inches, or £9 for the six slides, and about half that price for plates 7 by 4½ inches. Photographers abroad would have to send the camera or dark slide to the makers to get the double slide made.

The changing bag is a cheap, portable, and efficient contrivance; moreover, it is a thing which a photographer can get made in any part of the world. It consists of a bag made of some material impervious to light, such as black cotton twill, or black and yellow combined; it should fit loosely over the head and shoulders of the operator, and tie with cords round the waist; in front there should be an opening covered with several thicknesses of the most non-actinic fabric procurable, only sufficient light being admitted to see to change the plate. To change the plate, the plate box should be slung by a strap round the neck, so as to hang in a convenient position in front of the operator; the slide may be attached by some simple contrivance to the plate box, or it may be placed in a pocket in the bag made to hold it just below the window. When the plate-box and slide have been adjusted, the bag is drawn over the head and shoulders, and secured round the waist, so that no light shall be admitted; the operator has now both hands free to change the plate.

Another form of changing apparatus is the changing box. The plates are contained in a grooved box resembling the ordinary plate box, but the lid is so arranged that a dark slide (specially made) can be attached to it. By a simple contrivance, the slide containing the plate that is to be changed is brought over an empty groove in the box, and the plate is allowed to slide down into the box. To get a fresh plate into the slide, the latter is brought over a plate in the box, so that the grooves in the box and slide correspond; and by turning the box upside down, the plate slips into its place in the dark slide, which is then removed, and is ready to place in the camera. The price of the apparatus and special slide is about the same as that of six double slides, and it takes up nearly the same space. In any arrangement for sliding the plates from a box into a slide, there is more risk of the plates abrading the grooves, and so producing dust, which is apt to settle on the plates. The efficiency of the above contrivance depends upon all the parts maintaining their accuracy of adjustment; and as the parts are for portability, and are slightly made, it could scarcely be recom-

mended for use in a tropical climate, where all wood is apt to shrink, swell, and twist.

There is another form of changing apparatus in which the plate-box is attached to the back edge of the baseboard of the camera, the lid opening towards the operator; the slide is retained in its place in the camera during the operation of changing a plate. To change a plate, the operator opens up the hinged back of the dark slide, while with the left hand he keeps the plate in its place; the hinged back, being held up by a spring, both hands are free to transfer the plate from the slide to the plate-box. A fresh plate is then placed in the dark slide, the slide and plate-box closed, and the latter taken off the camera. Of course, a cotton covering impervious to light, and leaving openings to introduce the hands, with elastic bands encircling the wrists to keep out the light, must be provided; it should envelop the plate-box and back part of the camera, so as to exclude all light. To enable the operator to see what he is about, an eye-piece can be arranged to look into the apparatus, and a window to provide light; but the plates and slide are so conveniently placed, that after a little practice no difficulty will be experienced in changing the plates.

In conclusion, a few observations on plate-boxes for holding dry plates will not be out of place. Experienced workers prefer wooden to metal boxes, as the plates are liable to be broken in the latter in travelling. Pine is injurious to dry plates; but there is not this objection to walnut wood. The American walnut wood is the variety preferred, as less apt to shrink or twist than the ordinary kinds. The strip of wood which is usually glued inside to the front and back of the box connecting the pieces in which the grooves are cut, and projecting above the edge, should be thicker than usual, so as to admit of their being joined to the grooved pieces by a lap joint, which is less liable to open out and admit light than the simple mitre joint usually employed.

As a further precaution against the entrance of light, a narrow bead of wood may be inserted all round the upper edge of the box, with a corresponding groove round the edge of the lid to receive it. As the hinges, if attached in the ordinary way, would interfere with the grooving and bead, they should be screwed on to the outside of the box. A lock is a useful adjunct to the dry-plate box, as it obviates the danger of any one opening the box inadvertently or through curiosity, and so damaging the sensitive plate.

As the bead must be cut away, thin the lock corners. A brass plate about an inch longer on each side than the lock should be screwed on the outside of the lid, above the lock. The boxes should have two strips of pure (not vulcanized) india-rubber, fixed inside top and bottom, for safety to the plates in travelling. A strap screwed to each side of the box, and united by a buckle above the lid, will be found convenient for raising the box when it has to be moved. The walnut boxes usually sold for dry plates have a sliding lid, and an inner lid with a spring to steady the plates, so that the cover consists of two loose pieces. As the outer lid runs in a groove it is liable to stick in damp weather. These boxes answer well, no doubt, in a temperate climate, but in a tropical climate they could scarcely be relied upon.

PHOTOGRAPHY AT THE ROYAL OBSERVATORY.

In the Annual Report of the Astronomer-Royal of the operations at the Royal Observatory at Greenwich, there are the following remarks on spectroscopic and photographic observations:—

During the past year, spectroscopic observations have been almost entirely suspended, in order that the reductions of accumulated photographic observations might proceed more

rapidly. The sun's chromosphere has been examined on seven days only, and, on five of these, prominences were seen. Two measures of the displacement of the F line in the spectrum of α Virginis, and 26 of the b lines in the spectra of 6 stars (3 of them not previously examined), as compared with the corresponding lines of hydrogen and magnesium, have been made. In five of these, though the stars were of the second magnitude only, a dispersive power equivalent to fifteen prisms of 60° was used. These observations were checked by reference to the F or b lines in the spectrum of the moon or of the sky.

The spectrum of Brorsen's comet has been examined with the half-prism spectroscope, and that of the eclipsed moon on 1878, August 12, with the single-prism spectroscope.

The solar spectrum in the neighbourhood of G has been examined with reference to the existence of bright lines in this region, and several photographs of this part of the spectrum have been taken.

Photographs of the sun have been taken on 150 days, and 228 of these have been selected for preservation. The photographs show a complete absence of spots on 121 days out of 150; and on comparing them with those of the preceding year, when there was an absence of spots on 66 days out of 156, it appears that we have not yet passed the minimum.

On the reduction of spectroscopic and photographic observations it is stated that the spectroscopic observations of all kinds have been completely reduced.

The areas, position-angles, and distances from the sun's centre, of sun-spots and faculae, have been measured in duplicate up to the present time, and the measures completely reduced, so as to exhibit areas in millionths of the sun's visible surface, and heliographic longitudes and latitudes. Great efforts have been made to bring up these reductions, and they have now been perfectly corrected for an instrumental error above mentioned.

On photography as aiding magnetical and meteorological observations we learn that the photographic sheets giving a continuous record of the magnetometers, barometers, thermometers, and electrometers, are in excellent state, the indications of the last-named instrument being specially interesting. The zeros of the photographic curves are determined by readings of the magnetometers and electrometers taken four times a day; and occasional observations of dip, deflexion, and zero of the declination-theodolite give the absolute values of the magnetic elements.

Our former arrangements were adapted only to reductions by monthly means. We are now endeavouring to make them more available for single-day exhibition, in which state the results can be compared more easily with those of other observatories.

A RAPID PROCESS.

BY H. M. BEZLES *

I HAVE hesitated somewhat before making up my mind to give formulæ for this process, for so much depends on the manipulation or correctness of method in doing a thing that I suspect some may, after a trial in which directions may not have been very closely followed, pronounce me a fraud and my process a failure; still, in careful hands it will be a success, and will do just all I claim for it.

You will be surprised at the similarity of the formulæ to those so often published, and so I repeat, if you desire to obtain the result, carry out the process in all its details. Two or three dollars judiciously expended will do it. Temperature can be maintained by means of a tin box of the proper capacity to hold bath-holder and developer, a thermometer, and a kerosene lamp.

1st. Plates on which the negatives are taken must be cleaned very thoroughly, if new, with acid, and washed through several changes of clean water with a soft rag, and the last time with a sponge. Be careful each time to touch

all the surface, and remove all impurities.* See that there is no grease or perspiration on your hands. Now albuminize with the following:—Whites of two eggs; two ounces soft water; add twenty drops acetic acid No. 8. Stir thoroughly with a strip of glass, and then let stand until the fibrine separates from the albumen, say ten or fifteen minutes. Filter first through clean muslin, to take out fibrine, then through filter paper or filter cotton which has first been dampened with sulphuric ether, then add sixteen ounces pure soft water. Immediately after washing your glass with the sponge, rinse in pure water under the tap, and flow your plate from a graduate, in the same manner as you would with collodion, and set up to dry in a room free from dust or dampness, *i. e.*, one having a damp atmosphere. Your floor may be sprinkled if necessary.

Collodion.

Alcohol, 95 per cent., or Atwood's	...	1 ounce
Iodide of ammonium (light)	...	5 grains
Iodide of cadmium	...	5 "
Bromide of cadmium	...	6 "
Shake well and add ether	...	1 ounce
Shake well for a few minutes, and filter, then add		
negative cotton (Anthony's)	...	10 grains

This collodion will keep almost indefinitely, and will ripen in about ten days so as to be ready for use. It will probably be as white as when made, if so, add of any old red collodion, enough to produce a very light sherry colour. If you have no old collodion, add of alcoholic tincture of iodine until the same effect is produced. If all right it will have that bright sparkle which all artists so much like to see. Keep it cool, not cold.

Bath temperature	...	70° Fahr.
Pure soft water...	...	1 ounce
Silver, fused	...	40 grains

Take your silver, if new, and fuse it; and take of any old bath a quantity, and also fuse, and of the two make your new bath, or you may use all old silver; but do not use all new silver, for the old silver is your iodizer, and will cause your new bath to work harmoniously from the first. Acidulate with nitric acid C. P., until your bath works clear; use no more than that. Do not use acetic acid, for there may be nitrite of silver in your bath, and it requires nitric acid to reduce it to nitrate.

Developer.

Temperature	...	70° to 100° Fahr.
Water	...	1 ounce
Photo sulphate of iron from 20 to 60 grains usually	...	30 grains
Acetic acid, No. 8, 1 to 3 ounces to 16 of developer.		

If your exposure has been very short, use very strong developer; if you think it fully timed, use developer weak. Of course, strong developer requires more acid than weak does. Fix and re-develop as usual. If this set of formulæ be followed closely with good light and a lens of ordinary rapidity, a fully-timed negative may be made with a 1-2 or 4-4 size lens in from one to ten seconds. If after a time your bath begins to work slow, you will need to fuse it again.

I do not claim instantaneity. It is simply a rapid process.

Do not throw your headrests away; after you have posed a subject they will be very useful in assisting said subject to maintain his or her position, and if you care anything for pose, don't throw them away—don't!

Correspondence.

PHOTOGRAPH OF MIRAGE.

DEAR SIR,—The News for May 30 gives a report from the *Lancet* of the mirage photographed at Tenby. Perhaps

* If your glass has been used before, of course it will be necessary to use potash, soda, or some other method to clean off the old films.

a few words from the photographer in question will not be amiss to explain the reason for taking the tower of Tenby Church.

The weatherecock had lost its tail and one wing. A Manchester firm sent men to take it down and repair it. When replacing the cock on the spire on the evening of Monday, 5th of May, I photographed the spire when the two men were at the top fixing it—time as marked by the church clock, quarter to six. One of the men suggested taking another photograph after the top piece was removed with pulley for hoisting the weathercock into its place, to show off the cock to better advantage.

I took another negative—time, twenty minutes past six—when the mirage appeared across the spire, about three parts of the way up the steeple. At first I thought the negative was spoilt—stained; but on examination, when pouring off the developer, I distinctly saw the outline of a boat with flags flying. My first thought was, it must be a wreck with signal flying—this is a mirage of it. Such things had been spoken of in an old "Tenby Guide," which I remembered. It was not until the following week I heard of two gunboats having been launched at Pembroke Dock the same evening, when my attention was drawn to it by the Tenby correspondent of the *South Wales Daily News*. Subsequently several parties who were present at the launch came to look at the photograph, and each one said it was just as the boat lay in the water after the launch, with large flag flying at the stern, and smaller one at the bow.

It was taken on a new glass, that had not been used before, from Claudet and Houghton. Clouds of dust had been blowing over the town during the afternoon. The glass changed several times in the course of the day: towards evening, a peculiar purplish red tinge in the sky, the moon appearing like a ball of deep red fire in the heavens.—I am, sir, respectfully yours,

ROBERT SYMONS.

[In the photograph enclosed the inverted image of the ship is quite visible floating in the clouds behind the spire of the church, and the picture is a very interesting photograph of a mirage.—Ed.]

PORTRAITURE BY GASLIGHT.

DEAR SIR,—In your article upon portraiture by gaslight you very truly observed that the advance of summer quenched much of the interest attached to that subject. Certainly my experiments in that direction might reasonably have ended until the approach of winter, but such was not to be, for no later than last week, two nights, from sunset to near upon midnight, were devoted to some very interesting experiments. They were partly suggested by your remarks upon naphthalizing gas, and partly by the visit of Mr. Sugg to this town to deliver a lecture at the meeting of the British Association of Gas Managers held here last week. Amongst the apparatus shown by Mr. Sugg was a new burner, the largest yet made by that gentleman on his well known Argand principle, which is capable of giving a light equal to 400 candles.

Being desirous of testing its actinism, Mr. Sugg kindly allowed me the use of it, and, after repeated trials, it was found to be equal to that of Wigham's of corresponding intensity. The consumption of gas was about 100 feet per hour. Mr. Sugg is himself an amateur photographer, and is naturally much interested in these experiments—indeed, so much so, that he is constructing a larger lamp, from which he expects to get an illuminating power of 1,000 candles; when finished, Mr Sugg has promised me a trial of it. Having so far settled the actinic power of the light with ordinary gas, and taken careful note of the exposures, my next step was to try the effect of charging the gas with addition carbon.

For this purpose I was supplied by Mr. Bramley, of this town, with a very compact apparatus which he calls a "carburetor." This was attached to the service-pipe,

and, under precisely the same conditions as before, several negatives were taken, but, to my surprise, with no increase of actinism. The exposure was not reduced one iota by the additional carbon, either with Wigham's or Sugg's burners. This conclusion was not arrived at by an isolated exposure, but by several, and from various sitters. Upon careful comparison by daylight, no appreciable difference could be traced between the negatives taken with and without the "carburetor." With ordinary burners the whiteness and brilliancy of the light is considerably increased after the gas has been charged with extra carbon; it seems, therefore, evident that the burners of Wigham and Sugg are perfect in themselves, and attain without further aid very great actinic power. In these experiments, wet plates were used as being the most reliable, inasmuch as I am more conversant with their preparation, and there could be little if any variation in a dozen or so.

For practice work, however, by gaslight, there is nothing to compete with gelatine plates. I have used those prepared by Mr. Swan with very great success, and in my estimation they are, for gas-light portraiture, the right thing in the right place. They are exquisitely sensitive, and very reliable.

With reflectors there is much to be done. The simple ones I have used have certainly given good results, but with a properly constructed reflector which will utilize every ray of light, it is possible that the burners of 400 candle power will be found amply sufficient for all practical purposes.

In my next experiments, whenever they may take place (certainly not for some time to come), I purpose trying a burner (say) of 200 candle power, or even less, for lighting up the shadow side of the sitter. It may or may not be preferable to reflected light. A trial, however, only can decide that.—I am, yours truly,

P. M. LAWS.

GREEN PAINT FOR STUDIO WINDOWS.

DEAR SIR,—In June 6th issue of the PHOTOGRAPHIC NEWS Mr. J. Traill Taylor gives a long account of a new colour for the interior of a studio, with some excellent—and I have not the least doubt, well-founded—remarks concerning it. But I should like to know how it is that blue requires a less exposure; therefore, would not the latter be the best for the interior of studio? I think if there were two studios, one painted a pea green, as Mr. J. T. Taylor suggests, and the other blue, that far quicker portraits could be taken in the latter. Blue requiring a less exposure, a person could be photographed quicker under a blue than green studio.—I remain, yours truly,

Bangor, N.W.

A. CLARKE, Jun.

[Our correspondent should note that Mr. Taylor's paper was a comment upon the proposal of an American photographer, who alleged that he had found great advantage from the use of an olive green for the interior of his studio. We have not tried it, nor seen it tried; but to us it seems to be alike opposed to theory and experience.—Ed.]

Talk in the Studio.

PHOTOGRAPHING THE AMEER.—A correspondent writes to us (*Daily News*) from Gandamak, May 17:—The day before yesterday it had been arranged that after the political sitting was finished, the Ameer was to have another sitting, in order to be photographed by Mr. Bourke, and the special artists of the illustrated papers were also to be allowed the privilege of "gazing on the light of the Ameer's countenance." These proceedings led to a sort of free-and-easy mixing of those present, and the grave Councillors of State threw off the re-

serve of official dignity, and walked about with more freedom from restraint than we had yet seen. The Ameer himself disappeared, and in a very short time returned in a much more gorgeous costume than he has ever turned out in here before. This was perfectly European in all its details. The style was evidently formed after the model of a dress worn by a German, or, most probably, a Russian Kaiser; certainly it was not copied from the Prince of Wales, the Viceroy of India, or from any of our officials, civil or military. The coat and trousers were of white cloth, heavily embroidered with gold, epaulettes of gold, and a sash of blue, with three gold stripes through it, was worn over the left shoulder. As no star or other decoration accompanied this part of the uniform, the conclusion is reasonable that it did not belong to any order, but that it was merely worn for the sake of appearance. The head-gear was a steel helmet with gold, and a plume of feathers surmounting it. He was photographed with this helmet on, and then with it off, and this gave us opportunities of seeing more accurately the character of the man's face and head. He parts his hair in the middle, and when the helmet was off, the front view of the face presents a wonderful resemblance to the Duke of Edinburgh; this was noticed by more than one of those present. In profile this likeness could not be seen. The projection of the forehead over the eyes is marked, but the brow retreats very much, the head being remarkably high and small, the height being behind and not in front. The photographic negatives were submitted for his inspection, and then he asked to see the artists' sketches. These rough outlines had only been done while the Ameer was being posed for the photographer, and were made from a distance. They were fragmentary and unfinished, and it was evident the ruler of Cabul did not consider that sufficient justice had been done to his face or his splendid uniform. However, he took everything very good-naturedly, and repeatedly laughed at what was going on. Evidently the cares of State were forgotten for the moment, or the negotiations had gone on favourably during the morning sitting. A group of his Highland Brigade had to be done, and the posing of these uncouth Afghans led to more laughter. An attendant brought the Ameer's chillam, or "hubblo-bubble," which he smoked, and looked on, taking a great interest in all the details of photography, and I was much astonished to find that he could speak English. He cannot be said to be quite *au fait* at that language, still he could form sentences, and managed in rather a slow way to express himself. It would seem that he learned it when a boy, and it is said he can read it very well. Daud Shah took some interest in the posing of the Highlanders; but from the way he pushed the tallest man to the front, and the short ones to the rear, it was evident that a good military appearance influenced his thoughts more than that of picturesque effect. The Mastaufi also took a great interest in the proceedings. He seems a good-natured little man, and smiled and laughed with the others. Indeed they all seemed so happy, one could not for a moment suppose that there was a single hitch in the more serious political deliberations which were for the moment in the background. Being photographed and sketched was evidently quite a new sensation to these people, who have passed their lives in such an out-of-the-way place as Cabul, and they seemed to enjoy the new experience immensely. Orientals are very anxious about their appearance in a picture. No young lady could be more sensitive on this point, nor harder to please, than they are.

To Correspondents.

R. LAMBERT.—Many of the iodides are sparingly soluble in alcohol, and require some pains to secure perfect solution. It is necessary to proceed as follows:—Place a portion of the salts in a Wedgwood mortar with a little of the alcohol, and triturate them together with the pestle until they are dissolved, adding a little more alcohol from time to time. It is sometimes necessary to add a drop or two of distilled water when the alcohol is very highly rectified, as in your case. That which is now undissolved in your collodion will not dissolve at all without some special aid. Carefully decant off the collodion, and then add a few drops of water to the salts, which, by the aid of stirring and shaking, may produce solution: then add the collodion, and try. But it is a failure difficult to remedy.

NEMO.—The dead black used inside cameras, &c., is lamp-black mixed with size or weak glue. If mixed with a spirit varnish, and applied cold, it will dry dead.

VARNISH.—Splitting of films may be the result of various causes. The character of the collodion is a common cause. The use of an over-acid bath is another cause. The use of dirty or damp plates is a common cause. Under-exposure and over-development form another cause. You do not proceed in the right way in albumenizing the glass, we fear. Beat up the white of one egg with a pint of water, and apply it with a Blanchard brush, which consists of a strip of swansdown calico tied on the end of a strip of glass. When there is a tendency in the films to split a week or two after they are produced, take care to varnish immediately after they are dried, and this will prevent splitting. 2. We do not quite understand the "mottling" to which you refer as appearing after varnishing. We have seen such a result arise from the negative being imperfectly washed after fixing, and leaving some of the fixing salts in the film. The fact that it disappears after a second varnishing suggests that the varnish is somewhat thin, or the plate is suffered to chill before the varnish is dry. 3. The addition of carbonate of ammonia to the fixing bath is an advantage, one ounce to a pint of fixing solution containing four ounces of hyposulphite.

BIG HYPO.—The use of the old hypo bath for toning was discarded because it gave fading prints. The toning such baths effected was chiefly sulphur toning. We cannot enter fully into the philosophy of the subject in this column, but will endeavour to say something about it in our next.

F. A. BATHURST asks for the most perfect process of printing on wood. The question is scarcely sufficiently explicit. Our correspondent does not say for what purpose the printing is required, whether for ornamental purposes, or for the use of the engraver on wood. If he will explain the purpose we can probably help him.

G. C. H.—So far as our knowledge goes, opal pictures are rarely coloured in oil, but in water colours, a matt varnish being used to prepare the surface. If they were coloured in oil, a spirit varnish would answer best, giving the most solid surface upon which to apply oil colours. A good negative varnish would answer, we think.

H. C.—You will find it safer to adhere to the method described by Canon Beechey. Crushing nitrate of silver on writing paper is not so safe as in an agate mortar. The bottle containing the alcohol and silver may be heated in a pan of hot water instead of boiling in a test tube, although the last is simple enough.

HAACKMAN.—The parcel was duly received, and we thought it was acknowledged. We will write in a day or two.

H. B.—The *Moniteur de la Photographie*, published at 13, *Quai Voltaire*, Paris, will best answer your purpose for advertising. We cannot tell you anything of the charges.

C. A. MAXWELL.—We cannot give you a better formula for restoring ferrous oxalate than that given by Mr. Swan on p. 198 of our last volume, in which a hank of iron wire is kept in the solution. It is not necessary to boil them together.

D'ARCY.—Negatives from rapid dry plates are as well suited for enlarging purposes as wet negatives, and, in fact, possess a less granular texture.

DR. LIESEGANG.—Received "Ferrotypie." Thanks.

J. S.—Your letter arrived too late for a full answer this week. See Leader.

L. BERRY.—Thanks. We shall have something to say in our next.

G. NESBITT.—The paper has not reached us.

J. D. HANNAIL.—The authorities at Stationers' Hall do not give receipts or acknowledgments of registration.

Several Correspondents in our next.

PATENTS.

COMPILED BY MR. F. DES VŒUX,

Patent, Trade Marks, and Photograph Copyright Agent, 32, Southampton Buildings, Chancery Lane, London.

No. 2095. Joseph Horatio Ritchie, of 57, Fenchurch Street, City of London. "Improvements in compositions to be used in the preparation of sensitive photographic plates." Dated 26 May, 1879.

PHOTOGRAPHS REGISTERED.

MR. R. L. GRAHAM, Leamington, Photograph of North Warwickshire Hounds and Stoneleigh Abbey.

MR. A. TIPPINS, Sleaford, Photograph of Mr. Joseph Allcot.

MESSRS. J. BLOMFIELD & CO., Hastings, Two Photographs of Claude Pelley.

MR. BRYAN, Lowestoft, Photograph of South Pier and Harbour, Lowestoft.

MR. A. G. GIBSON, Penzance, Photograph of Esplanade and Baths, Penzance.

Photograph of St. John's Hall, Penzance, with Centenary Exhibition in honour of Sir Humphrey Davy.

MESSRS. J. WESTON & SONS, Folkestone, Two Photographs of Lord Chelmsford.

The Photographic News, June 27, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO. THE PERMANENCE OF CARBON PRINTS—A NEW APPLICATION OF PHOTOGRAPHY IN JOURNALISM—THE ANNUAL PHOTOGRAPHIC EXHIBITION.

The Permanence of Carbon Prints.—We must once more protest against the absurdity of denying the permanence of pigment prints. That it is possible to produce both pigment tissue and transfer paper of such a nature that the former bleaches, and the latter yellows, need scarcely be said, for there are colours which will always fade, and papers that will always change with age. But if Indian ink, or some other equally good carbon preparation, is the pigment employed, and the paper is a substantial, well-made material, the result will be a tissue that is to all intents and purposes imperishable. But for some reason it has become the custom to cry down carbon prints, not only in this country, but in Germany and France. What carbon photography can do and has done is shown by the magnificent specimens that were produced in the early days by Mr. Swan, and subsequently at Dornach by the great firm of Braun et Cie. To say that these grand specimens of photography fade or discolour would be ridiculous, nor will any pigment prints do so that are prepared under ordinary circumstances. That many tissues have been manufactured of a fleeting character without any carbon in them at all, there is very little doubt, however; but in like manner you may term a thing gold which has no gold whatever in its composition. It is because a good deal of inferior carbon tissue—or spurious, one might really call it—has been manufactured of late that we get these complaints. A photographer seizes a sample of tissue or some delicate purple hue from the first dealer, makes a picture, and puts it into a frame, wherein it is exposed to sunlight for weeks or months. In the end it shows decided evidence of fading, and the experiment is sufficient proof in the photographer's mind that carbon prints fade. The late M. Lacan, our regretted Paris Correspondent, had some misgivings on the subject of carbon prints, from the circumstance that he found in his collection two or three pictures which were certainly very faint impressions. He exhibited them to the Editor of this journal, who recognized them at once as some of the early carbon prints produced at the General Photographie Establishment of the War Department at Woolwich. He advised M. Lacan to communicate on the subject with Mr. Baden Pritchard, under whose care, doubtless, the pictures were produced, and the latter gentleman soon furnished a satisfactory explanation of the fact. They were prints forwarded to M. Lacan for submission to the French Photographic Society in illustration of the continuing action of light rays upon a bichromated gelatine film, and upon the back of the *soi-disant* faded prints were the figures $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, to intimate that they had been developed immediately after receiving $\frac{1}{4}$ a fraction of their proper exposure, to compare with others that had been kept some hours in the dark before development, and which appeared as if they had been fully printed in the sun. If Mr. Pritchard had not been referred to, these prints might to this day have been taken as undeniable evidence of the fading of really good tissue. Abroad, apparently, there is a good deal of tissue prepared with pigments that fade, for it is not so long ago that M. Reutlinger, the well known Paris portraitist, showed specimens of bleached tissue, and his experience was confirmed by several Berlin photographers. But there was nothing novel in the experience. Everybody knows that there are colours that fade in the sun, and if you make up a tissue with such colours, that, of course, will fade too. We do not wish to deny that there are troubles connected with pigment printing; far from it. And not only this, but we think many err in making far too light of such troubles, and hence it is that they abandon

carbon printing. Such a beautiful process needs no bolstering up from our hands or anybody else's. It is bound to make its way, whether or no; and if there is bad tissue abroad that gives pictures which alter, it is equally certain that the Autotype Company and other large manufacturers are quite capable of supplying a tissue that does not. It is the greater or less difficulties experienced in the printing, and not the non-permanence of the prints, that makes many dislike the process; but they are unwilling to ascribe their abandonment to anything that might cast suspicion upon their own ability. It is a pity this should be so, for since the process has not yet reached the stage of perfection, and you have still to put up with many vagaries in the behaviour of the tissue, sufficient reason in all conscience exists for many to put aside carbon printing for the moment. But until we have proof positive that sunshine really possesses the action of paling lamp-black and stable pigments of a like nature, we shall refuse to believe in the fading of ordinary carbon prints.

A New Application of Photography in Journalism.—An illustrated journal has recently appeared, which owes its origin in the main to photography. It is a publication intended for youth, and called the *Prize Paper*, written and illustrated by juveniles themselves. Prizes are offered for the best contributions, whether in the form of literature or sketches, and these are published. The sketches are all reproduced by photography. A set of rules are drawn up by the Editor to guide the juvenile artists, and these specify, in the first place, that all drawings are to be by pen and ink, or lined in Indian ink with a fine brush. The size of these drawings is also specified, so that reproduction afterwards by means of the camera is a matter of very little difficulty. The sketch is taken away by the photographer, and he returns with an etched counterpart on type metal that can be printed in the printing press. Outline sketches appear best suited for reproduction in this way, and if the lines are clearly traced, and the sketch in the first instance of considerable size, a very neat and pleasing impression is the result. As all the sketches are treated in precisely the same manner, and are, moreover, impartially subjected to a process which works on all alike, photography is made to serve a very useful purpose in the *Prize Paper*, while it certainly is a happy idea to get the readers of a journal to write it for themselves.

The Annual Photographic Exhibition.—The Photographic Society has determined to award medals again at their annual exhibition in October; but the awards are to be made in a somewhat novel fashion. In a word, the judges are to have a number of medals placed at their disposal to award for this or that, as their good sense or idiosyncracies may dictate. The medals are to be given for objects of artistic or scientific worth, which means, of course, that they can just do as they please. We are not sure that the plan is not a very good one; at any rate, it is one worth trying. It is impossible to guess beforehand how many candidates there are likely to be in any one branch, and it is rather a pity, when the show of landscapes or portraits turns out to be an exceptionally good one, that the number of medals available to a class is limited. At the same time, it has happened, and happened frequently, that the award has been a simple walk over, for the simple reason of the paucity of exhibitors. To encourage foreign work, it might, perhaps, be advisable to set apart a certain number of medals for strangers from other lands, for inasmuch as the jury is not an international one, there is always a chance of their claims not being sufficiently understood and recognized. The attraction of foreign exhibitors has, we know, frequently occupied the attention of the Council of the Photographic Society; and it is a well-known fact that unless special inducements are offered, their co-operation, as one can well imagine, is scarcely to be expected. Let us hope that the forthcoming collection at Pall Mall will be a successful one.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY BY THE ELECTRIC LIGHT IN A FRENCH COURT OF JUSTICE.

THE question, whether the Vander Weyde system of the application of the electric light to photography is, or is not, public property, is one which is just now forcibly occupying the attention of the photographic world in France. And there is much reason for this, for the question possesses more than one interesting aspect: there is, in the first place, the point of law as to what rights are attached to a patent taken out in France, and then there is the doubt as to the line of conduct to be pursued by photographers who desire to work the electric light in their own studios.

Naturally there was some excitement at the thought of the advantages which operators by the electric light would be able to possess, once it was completely established, that by a new process really practical results could be obtained. It was remembered that the ill success of the first attempts to introduce the electric light into photographic work had caused them to be quickly abandoned, and that since then they had never been renewed. In the English Department of the late International Exhibition at Paris there were shown some photographs taken by the Vander Weyde system, and professional photographers were astonished, for all the artistic conditions which were formerly wanting were now combined in them. Thanks to the special organs of the press, in which the PHOTOGRAPHIC NEWS was one of the most active in bringing before the public the merit of the invention, it was learned that the technical requirements had been satisfactorily complied with by the new process, and that the employment of the electric light in photographic operations would henceforth be feasible; arguments—or, rather, proofs—not to be foregone were forthcoming. Some time ago, it is true, photographs had been taken by the electric light; the fact that this peculiar manifestation of energy could be successfully substituted for daylight was well known. But the apparatus used only allowed a pencil of rays to be emitted in a confined space, and the result was not what in photographic language is called "clean work." The great problem to be solved was that of the diffusion of the light, and this was successfully accomplished by M. Vander Weyde; according to the *Times* of the 25th of December, 1877, in an article containing an account of this valuable invention, M. Vander Weyde took out his patent in England on the 1st of February of the same year.

In France the discovery was only honoured from afar; people rejoiced at the idea that photographers would henceforward be independent of the changes of light, and would be able to work at any hour and during any kind of weather. There were, indeed, some who, before the Vander Weyde discovery, had rendered the assertion possible—and, indeed, even before electricity had been thought of at all for the purpose—placarded the startling absurdity, *Dull weather is the best*, in large brilliant letters illuminated by gas; but it was merely a means of advertisement, and gave occasion for many a laugh among professional photographers. Business men, whose time, during the hours of sunlight which was propitious to the operator is fully occupied, were prohibited from even going to the photographer, however desirous they might be of having their portraits taken; ladies could not realise their wishes of being represented in evening dress unless they put it on in daylight; actors and actresses, whose costumes are intended to produce any effect by the illumination of the foot-lights only, were compelled, much against the grain, to endure their finery in the full glare of the sun. In France, then, we have been content to stand on our old lines, though we still tried to emulate the photographic feats of the electric light in England.

All the advantages of the process, however, much as the French photographers appreciated them, they could only hope to realize by the employment of an electrical appa-

ratus giving a sufficiently diffused, and at the same time intense, light to produce a photograph. This was well known, and yet the old misleading ways were followed: the meat of the hare was always wanting to make a ragout. At length the patent right for France of the Vander Weyde system was bought by M. Liebert, who, of course, supposed that he had purchased also the right, not only of working the process for his own profit, but also of granting licences to others to do so. He therefore inaugurated sittings for the press, and gave a splendid fête—a description of which has already appeared in the PHOTOGRAPHIC NEWS—in order to give publicity to his new system, which certainly was deserving of all the honour that he showered upon it; in short, he made as much noise as he possibly could, as is the case with every adventurous speculator or fashionable artist. But, on the other hand, M. Pierre Petit has done all this without having purchased anything. At the grand fête held on the 8th June last, at the Paris Opera House, on behalf of the sufferers by the Szegedin inundations, M. Petit exhibited the whole process. It struck him that it would be an excellent occasion for killing several birds with one stone. He would give those who attended the fête the opportunity "*faire sa photographie à la l'électricité*," as says a curious song just now popular at the Alcazar; he would be largely aiding the charity; and he would be advertising the new process so as to benefit himself. But M. Liebert, who had bought the sole right of taking photographs by the Vander Weyde system in France, was not one to allow what he considered an infringement of that right. He therefore applied to the President of the proper tribunal, and, having explained that M. Pierre Petit had not acquired the necessary licence for working with an apparatus for producing the electric light, which was a mere copy of that of M. Vander Weyde, he obtained a legal injunction and the services of an officer to watch and see that nothing was done by night or day in preclusion of the rights of M. Liebert. In consequence, the officer of the court, accompanied by a police officer, and carrying an officially-stamped slip of paper, presented himself at the Opera at the height of the fête. This *coup de theatre* in a place whose frequenters are accustomed to similar *contretemps* did not give rise to so much disturbance as might have been expected. Fortunately for the success of the philanthropic work, for whose benefit the operations had been undertaken, the operations were not interrupted, so that the charity was no loser.

Up to this point, nothing extraordinary had taken place. All that had occurred was in regular order. The owner of a patent had obtained an injunction against a rival whom he had accused of infringing it. This may be seen every day, only, perhaps, not generally at a charitable fête in the Opera House. But the unexpected part of the affair came afterwards: M. Pierre Petit, in reply to his opponent, acknowledges that he operates with an electrical apparatus diffusing light by means of a converging pencil of rays, but he asserts that he has wronged no one, for the system employed by him being public property in France, he had a perfect right to make use of it. For the very reason that he believed himself to have that right, he did not think it necessary to pay for it, as M. Liebert had done. In a word, he laughs at the English patents of M. Vander Weyde.

Now what will Mr. Vander Weyde do in this case? Will he be satisfied to be considered as having invented nothing? Will he submit to the imputation of having illegally accepted payment for licences to work an invention the right to which up to the present no one has dared to deny him—an invention for which he had received the applause of all the world, and the honours and profits for which were thought to be legitimately his due? As may be seen, the question is a complicated and a difficult one. The courts of law are called upon to settle it, and their judgment—which, of course, will cause

all rights legally acquired to be respected—is awaited with impatience.

Faithful to the principles of duty that devolve upon the press, I shall content myself by giving an account of the position of affairs. I shall take care not to assume the attitude of a partisan, and shall leave to a legal tribunal the entire right of pronouncing judgment with a force that cannot fail to make itself felt. In every disputed question, the journalist should not rashly give prominence to his own personal opinions; if he desire to confine himself to the rôle of historian, he must put his predilection entirely on one side. But, if I may be allowed to offer disinterested advice, I would recommend photographers who are anxious to introduce the electric light into their studios without paying for a licence, to wait until this case has been legally and definitely decided. The *Moniteur de la Photographie*, however, seems to a certain extent to approve of M. Pierre Petit's course of action, and to think that there may be some special considerations in its favour; but I fear that this kind of argument may induce some photographers to enter on a path that may prove an insecure one.

In giving an account of the above-mentioned fête in the issue of the *Moniteur de la Photographie* of the 16th of the present month, the Editor asserts that all the instruments used by M. Pierre Petit on that occasion are public property, and not protected by patent. He has taken for his text the protest which M. Liebert has hastened to address to the journal in question, as well as to all the other scientific papers.

But if this assertion be accepted, it is as much as to say that any one can take photographs by the electric light on the new system of diffusion without the least reference to the rights to which Mr. Vander Weyde and M. Liebert lay claim. Now though it is easy to understand the impatience that must be felt by a number of operators to make use of a process by which they are sure to reap a decided advantage, and which will make them independent of their cruel enemy, "bad weather," it would nevertheless be distressing to see an inventor, after having made large sacrifices of time, labour, and money, deprived of the ability of himself reaping some of the benefits and advantages with which he has endowed his contemporaries. Life is a chain of links; the interests of one are bound up with those of another. No one can have the pretension to make his own rights respected without showing that he has the wish to respect the rights of others.

K. VERSNAEYEN.

OUT-DOOR PHOTOGRAPHY.

BY O. W. OSBORNE.*

HAVING experienced considerable trouble and vexation during my first efforts as an outdoor operator, which was caused principally by serving my apprenticeship under the wrong gentleman, who knew very little about landscape work, and having to be my own instructor, I have concluded to offer a suggestion or two for the benefit of the inexperienced, who should choose to lend a listening ear, and thereby remove some of the difficulties which are liable to be experienced by almost every new beginner.

The selection of instruments which are adapted to the work required to be done is of more importance than many are inclined to believe. I would not recommend the selection of lenses of too large an angle, for the reason that unless they are used with skill and judgement the results produced by them will not be so artistic as they would be if a lens of smaller angle had been used, say one of sixty-five or seventy degrees. A Voigtlander Euryscope, or a Dallmeyer Rapid Rectilinear, will be found very useful. They can be stopped down and made to do good work on architectural views. On account of the great power of light they command they will be found especially valuable for out-door groups, and, in

fact, all kinds of quick out-door work. Not only this, but they can be turned to good account under the sky-light, when you will find you have one of the best group instruments made. Of course, it is not to be presumed they will take the place of every other instrument, but for large groups they will do work that no regular portrait lens can possibly do. They will not be so rapid, but what they lack in that respect will be more than compensated for in definitions. There are occasions where lenses of very large angle must of necessity be used, viz., in street and other views in confined situations. It would be folly to pay twice what an instrument is worth during these hard times, for the sake of buying an imported instrument, when lenses are manufactured in this country, at a very moderate price, which combine all the necessary qualities of depth and angle, and are at the same time sold at a fair price. I allude to the Morrison and Zentmeyer wide angle view lenses, which in my opinion are unsurpassed where great depth and wide angle are desired—qualities which render them invaluable where a photographer finds himself crowded into a small street or alley, as is frequently the case in large cities. There are instruments manufactured by other opticians which are as good, but not any better.

In regard to the focal length of lens best suited to size picture to be made, much must, of course, be left to the discretion of the photographer. I would recommend no one to crowd the lens to its fullest capacity, as it would be like putting a steam engine to the test of doing all, and even more than it was intended to do. While the instrument would undoubtedly outlast the engine, the complete ruin of which could be looked for in the immediate future, yet the crowding of a lens to do more than it was intended to do will immediately result in the loss of a first-class reputation to the photographer; for a sorry sort of picture, full of distortions and imperfections, is the inevitable result of such usage. You can illustrate to your own satisfaction what I have said, by trying to make an eight by ten lense picture with a card lens.

In the selection of boxes, tripods, &c., I would recommend that nothing but the best be bought, even if you have to pay a little more for it than you would for the cheap-john stuff that is thrown upon the market to be sold as second-grade goods. A swing back is very essential, and no outfit should be considered complete without one or more boxes of suitable sizes containing the same.

It will be necessary to provide two or more lenses or sets of lenses to accommodate the same size picture; for the reason that, if you are photographing in a hilly or mountainous country, it will often be necessary to photograph a building standing upon an eminence, in which event it would perhaps be necessary to repair to a neighbouring hill, in order to be able to get the horizontal lines of the building to run in the right direction. Now, if you were only provided with one instrument, the chances are about three to one against you; for if of too short a focal length, the image of the building will not be sufficiently large to add the necessary charm which it was intended to add; and if of too long a focus, it will perhaps cause the house to occupy the greatest part of the plate, to the exclusion of other objects which would add materially to the beauty of the picture.

The day is past and gone, and I hope for ever, when a mere diagram of a scene would pass current as a work of art. Now the photographer must possess some artistic skill; he must see that the light falls in the right direction, in order to give the necessary relief, and also that the foreground is not shocked by the introduction of pig-styes and out-houses, which add nothing to, but on the other hand detract from, the beauty of the picture.

A very good way to improve, is to study paintings and engravings of landscapes by eminent artists. Enough real genuine art can be found in half a dozen chromos of different subjects, to make any photographer an artist if he would only silently study them, and try to reason out in his own mind why certain objects are disposed so as to occupy their

* *Practical Photographer.*

respective positions in the picture. A landscape painter would never be guilty of placing a castle or an old mill in the centre of his painting, and choking the foreground with a pile of brush and a lot of old barrels, just simply from choice; for, if such was the case, a spectator would naturally inquire if far more beautiful scenery was not lying behind this pile of débris, basking in the sun's genial rays beneath that beautiful ultramarine sky.

Where a foreground is barren of objects to break the monotony, and the view is one of particular interest, it would be well to introduce a few things, such as rocks, logs of wood, &c., which, if well done, will add a great deal to what would otherwise have been a very ordinary picture. If you can do no more, have your assistant rush out into the foreground, but let him be on the opposite side of the picture from where the principal object is located, for you must remember that all objects introduced as accessories must be in harmony, and also must be unobtrusive.

As I mentioned above, the horizontal lines and also those which are perpendicular play an important part in architectural photography, and upon their direction depends, in a great measure, the success or failure of the photograph as an artistic production. The instrument should be elevated sufficiently to allow the base line of a building to incline moderately upwards. Of course you will observe that the higher you place the instrument, the flatter will become the cornice lines of the building, and the steeper the base lines, and *vice versa*. All lines on a level with the instrument will neither appear to run up or down the paper as they recede toward the horizon of the picture; and therefore, and for that reason, the top or cornice lines of a building should have a *declination* equal to twice or three times the *inclination* of the base lines. When a negative of a building is made with a very wide angle instrument—as, for instance, a 11 by 14 negative with a lens 8 or 9 inches focus—and the building is made to cover almost the entire surface of the plate, the extreme top and bottom lines will appear to approach each other very rapidly; so much so, that a very disagreeable effect is the result, particularly where the instrument was placed too low.

The above is not the only fault caused by placing the instrument too low; for it is immaterial whether the distance increases perpendicularly or horizontally, the result is the same so far as the diminution of objects is concerned. Now do not understand me to say that a building sixty feet high will appear to decrease in size upward in the same ratio as if measured horizontally. Such would be the case if the distance to the top of the building from the instrument increased as rapidly as it does from the instrument to the farthest part of the building, measured horizontally. As an illustration, we will suppose a building one hundred feet square and sixty feet high to be standing on a level plane: now if the instrument be placed on the ground, just one hundred feet away, the farthest visible corner of the building will be almost twice as far away as the front corner, and of course will appear correspondingly smaller.

Now if a negative be made from this standpoint, the top of the picture will appear perceptibly smaller than the base, but the decrease in size would not be so great as the difference between the front and the back corners. The reason of this will appear after a moment's reflection. We have a distance of 100 feet to the building, but it is not, as a matter of course, 100 feet from the instrument to the top thereof; if it was, then objects on the upper portion of the building would appear to decrease in size as much as they would if located 60 feet away on the base-line. The reason that the perpendicular lines do not converge so much as the horizontal ones is because the difference between the base line and hypotenuse is very small—not being more than seventeen and one-third feet, which is only a little more than one-sixth the entire distance from the instrument to the building. Thus it is plain that objects on the top would only appear as much smaller as those at the base, as they would if located seventeen and one-third feet farther

away on the base line. Now if we increase the distance to two hundred feet and elevate the instrument twenty feet, or one-third the height of the building, the decrease of objects toward the top will be very slight; so much so that it would require an accurate measurement to detect the difference.

Another serious fault arises when the instrument is placed too low, and also too close to an object, which is, that the object has the appearance of falling away from the instrument; or, in other words, does not appear to occupy a perpendicular position.

Now do not, in the vain endeavour to avoid one error, run into the opposite extreme, and take your stand too high, and thus produce an effect which is just as disagreeable as the one mentioned above; for if you do, all objects in the picture will appear outlined against the ground, and those which are in the foreground will appear as if falling toward the instrument, and a sort of diagram or map will be the result, instead of an artistic picture.

To those who have no photographs which have been executed by skilled landscape photographers, I would recommend the purchase of a few copies of *Harper's Weekly*, containing the illustrations of English church architecture, for in them may be found many examples which, if well studied, would prove of almost incalculable value to any one having a taste for landscape or architectural photography. Those who have attained eminence as landscape photographers are not in the habit of photographing everything that happens to come before their instruments without first giving the subject some little consideration. It is always best to visit the locality to be photographed a day or two in advance, if not already acquainted with the scenery, and note down the best points from which to photograph the same, and also the best time of day to work from each of the different stand-points, if there are more than one.

Never attempt to photograph any white or light-coloured object with the sun shining full in front, for the result will be nothing but a miserable failure, at least so far as artistic merit is concerned. Better, by far, wait until the sun has passed around to the opposite side far enough to cast a perceptible shadow from every salient point—a shadow as long or broad, or a little longer or broader than the object casting the same is thick or high. As an illustration, a house thirty feet high should cast a shadow about thirty or more feet long.

From sunrise until half-past nine or ten o'clock in the morning, and from three o'clock till as late as you can work, is much better for simple landscapes than if the work had been done in the middle of the day.

NOTES ON STRONG ALKALINE DEVELOPERS.

BY COL. STUART WORTLEY.*

[In the course of a talk with the Editor the other day, he asked me to jot down a few notes for the Journal on the subject of emulsifying bromide of silver.

In 1873 I wrote as to emulsifying bromide of silver in collodion, and never found any difficulty in doing so, provided I mixed them thoroughly in a mortar, adding the one, little by little, to the other. It required knack and somewhat delicate manipulation, but the result was very satisfactory. So with gelatine I act in the same way, and with no drawback; still at present I prefer other methods of preparation.

I believe many negatives are lost from the want of studying the science of development. If room can be found for a reprint of a paper published by me in 1874, it will be found to bear exactly on the work of the present day.]

"The differences to be found in the use of developers of various strengths is a subject to which sufficient prominence has not hitherto been given; and while much has been written on the component parts of an emulsion, but little notice has been taken of the fact that with the same emulsion, or same bath process, an endless variety of negatives or

* *The Photographic Journal*.

transparencies can be produced, and thus to those who use a strong alkaline developer, the following hints will be of use:—

"If your negatives are coming too dense, reduce the amount of pyrogallie acid in your developer; if your plates, on the contrary, are wanting in density, increase the strength of the pyrogallie acid, adding, in the latter case, a drop or two more bromide to control the increased energy of the developer.

"The plate is very nearly as sensitive with a weak solution of pyro as with a strong one, and the development is under great control, as by adding a few drops of pyro from time to time (having commenced with the maximum of strong ammonia), the plate can be worked up to any required density. When liquid ammonia is used in the developer, the pyro and bromide should be applied to the plates before adding the ammonia to the developing solution.

"A modification that I have found of great value during the past summer has been the use of a preparation of gelatine in the alkaline developer. It enables one greatly to reduce the amount of bromide, and indeed, if necessary, to dispense with it altogether, as the gelatine has a great restraining power over the action of the ammonia, and does not, as bromide does, interfere with the production of detail. Gelatine also gives a beautiful deposit on the negative, and anyone having once used gelatine will, I think, adopt it for his future work.

"Tannin and gallic acid can also be used in the developer to replace bromide; but the quality and character of a negative developed with gelatine make me prefer that substance to either of the two last mentioned. You will remember that when gelatine was added to the iron developer some years since, it tended to produce a harder and denser negative than one developed with the ordinary iron developer, and, moreover, the plate required a longer exposure in the camera. The action of gelatine in the alkaline developer is, as nearly as possible, the reverse of all these conditions.

"Another subject which I have worked out is fuming by ammonia as a means of developing dry plates, and with the gelatino-bromide process I find great advantage in its use.

"The less a gelatine film has to do with water the better; and I prefer to develop a gelatino-bromide plate by pouring on it, to commence with, a developer composed of glycerine and water, or gelatine and water, and to which the necessary bromide and pyrogallie acid are added as usual. It is then put into the box and fumed, and a brilliant and perfect image very rapidly appears."

DEFECTS IN ALBUMENIZED PAPER.—WEAK AND STRONG SILVER BATHS.

In his correspondence with our Philadelphia contemporary, Dr. Vogel says:—

"It is a long time since so many complaints have been heard about albumen paper as in the last few weeks, although there was never any scarcity of complaints about this subject. I do not know whether the same cause of complaint exists in America, but I should think that with your variable climate, you would be subject to the same annoyance just as much as we here. The summer is pretty near at hand now, and with the rising of the thermometer an increase of the failures of albumen paper, and a consequent increase of spoiled pictures, will take place. It is a curious fact that the same defect appears often with paper of different manufacturers; and it seems to be a correct deduction from this fact, that one of the causes of the defects has to be looked for in the raw paper, as it is not likely that all the manufacturers work after one method and use the same albumen. Almost all the German manufacturers of albumen paper use Rive's paper, and it is not improbable that the same has undergone some change. One of the main causes of the complaints now heard is the formation of bladders, or blisters, in the albumen paper, and, in my opinion, this can only be caused by insufficient adhesion between the

paper and the layer of albumen, a tendency to blister being thus developed in the albumen paper.

"A proof of the correctness of my opinion is the fact that paper which shows a tendency to blister is ameliorated by laying the same with the back in water till the layer of albumen which lies on top begins to soften. Mr. Wenske first called attention to this fact; and paper treated this way, and dried afterwards, will not show any blisters. The water loosens considerably the structure of the paper, the albumen penetrates deeper, and combines mechanically more freely with the fibre, which prevents, to a great extent, the tendency to blister.

"In proceeding in the above manner, it is necessary to add about one and a half per cent. of chlor. natrium to the water, as otherwise too much salt is drawn from the paper. Many photographers, of course, will find this procedure too tedious, and, in fact, it ought to be attended to by the albumenizers themselves. Whenever I detect any blisters in albumen paper, I apply at once a weak fixing bath, about 1-25. Of course, the pictures must stay half an hour in the bath; but no blisters appear with such weak fixing baths.

"There is another defect in albumen paper much complained about of late, viz., that parts of the pictures are loosened to such an extent in the several baths they go through, that they can be easily wiped off. Sometimes, also, the varnish gets off by itself on those places, and this seems to occur more frequently in the cold than in the warm season; and it is said that by keeping the baths and the wash-water at about 68° Fahr., this annoyance is avoided. Mr. Schaarwachter, here, has noticed the defect, however, also during the warm season, and avoided the same by somewhat longer sensitizing (four to five minutes). Mr. Brandt, here, asserts that the manifold defects in albumen, so much complained about now, and almost unknown formerly, are solely due to the fact that now much weaker positive baths are used than formerly.

"Fifteen years ago, printing baths 1-6 or 1-5 were in general use, but then a number of stock-dealers put albumen paper in the market which, they asserted, needed only a silver bath 1-20; and, in fact, pictures were shown which had been produced with such a weak bath. A great saving of silver was expected; and the weak printing bath paraded in all the leaders of the photographic journals. But it soon became a well-known fact that although a weak silver bath produces good pictures when fresh, the subsequent prints deteriorate very rapidly. In America, this defect was avoided by fuming with ammonia, which way of doing has never been introduced here.

"Even in a strong bath, the sheets which are sensitized first are better than the last ones, but the difference is much less. The strong bath coagulates the layer of albumen better, and allows a more rapid sensibilization; and yet it is found that lately baths 1-10 are generally used, i.e., weaker than formerly, and the cause of it is that the papers are now salted much less than formerly. One to one and a half per cent. of chlor. ammonium are taken now, against double the quantity formerly. The consumption of silver was, in former times, about fifty grammes per sheet, while now it is only twenty-five grammes at the highest; but considering the many defects of albumen lately complained about, it would seem to be advisable to use stronger baths, not under 1-8. Weaker baths require to be controlled, not by the ordinary argentometer, which is always in the wrong with old baths, but in a chemical way, and by intensifying from time with fresh silver salt.

"Those who want to avoid the chemical test will proceed in the following manner:—Note the volume of the freshly-prepared bath, and the number of sheets which have been silvered in it. When the bath has been in use so long that only three-quarters of its original volume remain, add for each sensitized sheet, 1½ gramme (25 grains) nitrate of silver, and dilute the bath till it has reached its original volume again. If the silver bath is always intensified in this way, there will be few, if any, occasions to complain about failures in sensitizing."

The Photographic News.

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THE PHOTOGRAPHIC EXHIBITION.

THE exhibition of the Photographic Society has been now held so many years in unbroken succession, that it may fairly be regarded as an annual institution. In the early days of the Society it was intended that an exhibition should be held annually, and for a few years this intention was carried out. For some reasons, not now worth enquiring into, it was found after a time that the expenses so far exceeded the income that it was desirable to give up a project which, however desirable, was impoverishing the Society. The resumption of these exhibitions under more fortunate conditions we look on as a very happy circumstance, as there is nothing, probably, so much contributes to progressive excellence as the emulation produced by an exhibition, in which, whether prizes are offered or not, a competitive spirit must more or less prevail. Apart even from the competitive spirit, and the aim at excelling which must exist, the annual display of the best work of the best men must inevitably be valuable and stimulative. Such a display furnishes a standard to photographers scattered about the country, who would otherwise be at a loss to know the latest possibilities of the art, what styles are in vogue, and what "fashions" prevail. Such an exhibition also affords the public, interested in photography, to estimate the progress of the art, and to see its highest possibilities, rarely seen in the ordinary commercial practice of photography.

At the next exhibition, to be held for about six weeks during the month of October and the first fortnight of November, the Council has decided that medals for excellence shall be offered as in former years, but with a difference as to the mode of award. A new principle is, in point of fact, to be introduced. Instead of apportioning the medals beforehand to the best works of special kinds, such as portraiture, landscapes, dry plate work, enlargements, &c., as on former occasions, a certain number of medals, or rather an uncertain number, will be placed in the hands of the Judges for award to examples of artistic or scientific excellence. Such an arrangement materially relaxes the conditions under which a jury of artists and scientific men have to study the pictures and make their decisions. To competitors generally the difficulties are somewhat increased, inasmuch as when an aim is made specific, a medal being offered for a defined thing, it is comparatively easy to work to the special end of producing that thing, whether it be portrait or landscape, or what not. Nevertheless, the projected comprehensiveness has many advantages, and offers inducements for originality and novelty of excellence, whilst the old system tended to foster working in grooves. The medals were offered for excellence in known

matters. In future there is no reason why they should not aim at high excellence in beaten paths; but there is also an inducement to originate new forms of excellence in either method or result. The constitution of the jury is well adapted to the rewards of excellence of this kind. It will contain, as on the last two occasions, two painters—probably Royal Academicians—two members of the Council, and two ordinary members of the Society. The painters may be fairly supposed to be most at home in deciding or pointing out the highest pictorial or artistic qualities in a picture, apart from the question as to whether it is portrait or whether it was taken on a dry or wet plate; whilst other members of the jury might indicate especial technical excellence worthy of being distinguished.

Another question may arise which may demand some consideration. If some special novelty or original form of excellence demand an award from the jury, the question may arise as to whether secrecy may be preserved, or whether making a clean breast of the *modus operandi* should be a condition of receiving a medal. To take an illustration. At the last Exhibition, some remarkable pictures were exhibited by a Russian photographer, M. Karelin, possessing special excellence in various forms, but having one feature of an unusually puzzling character. They consisted of groups of figures distributed over planes wide apart, some even sitting outside the window of a room in which the others were seated, all well defused, certainly better defined than, so far as we know, they would be rendered by any known lens. There seemed to be, according to the judgment of experienced photographers, some "dodge" in effecting this. It was, however, a high excellence which a jury endowed with the powers of the next jury might well distinguish by a medal. If so, should an explanation of the method be made a condition of the award? Some will say No: as the method itself might be worth more than a medal. But, on the other hand, it may be answered that the object of a society in offering medals is not to reward an inventor for devising something for his own benefit, but to promote progress, which is distinctly opposed to secrets. We do not undertake to decide the question. We merely suggest that such questions may arise, and should be provided for in the general conditions of competition.

There are now three clear months to prepare for the Exhibition, and we trust that some effort will be made to secure a good one. There is a new motive in the comprehensive openness of the competition sufficient to induce those who have carried off special medals to try in this new wide field.

THEORY AND PRACTICE.

THE recent discussion on gelatine plates at the Photographic Society suggests the idea whether something more could not be done to further our knowledge in this, as well as other matters, by going practically into the subject. The discussion, as the President rightly pointed out, was productive of much good, but a working investigation among expert photographers would do still more. Mr. Browrigg and Mr. Sebastian Davis agreed with each other that gelatine plates, in landscape photography at any rate, showed a lack of appreciation of detail and shadows, while Mr. Werge, on the other hand, no less a practised photographer, intimated considerable surprise at such statements. This is only one point of many that evoked attention in the important discussion, but it is sufficient for our purpose. Why cannot a discussion of this kind be followed up by a practical investigation, a matter in which many gentlemen, both amateur and professional, we feel sure, would be ready to assist. The meetings of the Photographic Society are over for the summer, and summer is of all times the best suited for the practical investigation of photographic problems. In photographic societies abroad it is the custom to nominate "commissions" to enquire into

subjects of a practical nature, the commission usually consisting of half-a-dozen gentlemen who are thorough-going photographers, and who are in no way pecuniarily interested in the subject under investigation. Whether it is a new developer, a patent albumenized paper, or a lens of novel construction, this is handed over to the Commission, who practically test the thing to the best of their ability. It might not be convenient to follow in every particular the manners and customs of these Commissions, nor is there any necessity for dubbing the investigators by the high-sounding title of Commissioner; but there cannot be a doubt that we might learn a good deal by following the example of foreign brethren to some extent. Indeed, for that matter, the Photographic Society has on several occasions asked members of its Council to act as investigators, but the occasions have been few and far between. The last, if we remember rightly, was at the time when Mr. Mac-lachlan announced that he had conceived a simple method of preparing and maintaining the silver dipping bath, when the Photographic Society appointed Mr. John Spiller and the late Mr. Le Neve Foster to look into the matter.

But in investigations of the nature to which we refer, there need be no restriction of the number of investigators to two or three. Half-a-dozen gentlemen, or even more, provided they were all of them familiar with camera work, would at a couple of sittings, by the working together and comparing results, bring to light a vast number of facts of practical importance. Take, for instance, the subject of developing and intensifying the gelatine film. So far as the meeting at the Photographic Society expressed itself, there seems at present no perfectly trustworthy plan of intensifying the gelatine image. If suitably exposed and suitably developed, the result was all that could be wished for; but, as Mr. Valentine Blanchard testified, there is a great deal still to be learned before we shall be able to rest on our oars. The experience of many will tally with that of Mr. Blanchard; but it is more than likely that if he witnessed the manipulation of gelatine plates by others who have employed them, he might become cognisant of details he had passed over, just as it is very certain that they, again, would learn something in seeing Mr. Blanchard operate.

The question as to whether gelatine plates really do fail to render half-tone in the shadows is another point that would be soon disposed of in the hands of half-a-dozen practical workers. Many of us unwittingly base our knowledge of a process upon too narrow a foundation. Some have been so fortunate as to obtain a supply of well-prepared and highly sensitive films, while others have been disgusted by a dozen failures. Some have confined their experience of gelatine plates to the studio, and others to landscape photography, and, fallacious as it may be, it certainly seems as if the better reports upon gelatine films come from in-door photographers, and not from those who occupy themselves with landscape work. This, however, would be only one point the more upon which a practical conference would set us right. When we get two such contradictory opinions as those of Mr. Sebastian Davis and Mr. Werge, it is surely high time that some steps should be taken to reconcile them.

But it is not only the gelatine process that seems to invite just now common investigation by practical men. There is the platinotype process, of which we have heard much of late, and about which we shall certainly like to hear more. Again, carbon printing offers many points that might be advantageously taken up. There are, in fact, several subjects of paramount interest at this moment which afford matter for practical investigation and discussion. Are there gentlemen to be found ready and willing to take part in such conferences? We cannot but believe such to be the case, especially among the practised amateurs of the present day. If such gentlemen desired some sanction or appointment, we have no doubt the Photographic Society would readily initiate the good work,

and the present time would be a suitable period of commencement. It is the custom abroad to draw up a report and publish the same in the organ of the Society, and there cannot be a doubt that the Photographic Society would readily take upon itself the expense of printing any such report as might be presented to them. So far as we are concerned, we have contented ourselves with making the suggestion, and those present at the last meeting of the Photographic Society can have no hesitation about the value of conferences or commissions such as we describe. Among amateur clubs there is, we know, nothing novel about the idea of meeting together and working experimentally with a certain collodion, developer, intensifier, &c., and it is the development of this action among photographers of standing which would be productive of so much substantial good, that we desire to see carried out.

DRY GELATINE VERSUS WET COLLODION.

In the above remarks it will be noticed the discussion at the Photographic Society is regarded from an abstract point of view; but we have a word to add of a more essentially personal and practical kind, which is due from us, as we were not able to be present at the meeting when Mr. Cowan referred to our opinion of the results of certain negatives produced on gelatine plates. The prints were shown to us without any intimation of any kind as to their respective origin. They appeared at first glance to be both from the same negative, with a difference only in the printing. They were, in fact, cabinet portraits, taken at the same sitting in immediate succession, and precisely alike in arrangement, &c. Both were good, as is all Mr. Cowan's work, but one looked a little over-soft, or, in point of fact, slightly flat; whilst the other, although very soft, full of detail, and fine modelling, was decidedly the more brilliant. We unhesitatingly decided in favour of the latter as the finest picture. We were then informed that it was from a gelatine plate, whilst the other was from a wet plate which had been exposed ten times as long as the gelatine plate. Lack of details in shadows was a complaint made by some of the members in relation to gelatine negatives. Nothing could exceed the perfect modelling, a quality greatly dependant upon detail in the shadows, in the print in question and some others we saw. We have, however, seen frequent examples of the lack of detail mentioned, especially in distant foliage, a grey foggy mass appearing instead of detail. But this we have no hesitation in saying is a common fault of mismanaged alkaline development, and is not by any means a peculiarity of gelatine plates.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.*

THE last meeting of the session was held on the evening of June 10th, at 5, Pall Mall, Mr. J. GLAISHER in the chair.

After the usual preliminary proceedings, the PRESIDENT asked Mr. Valentine Blanchard to favour the meeting with some observations on failures in the production of gelatine negatives, a subject he had kindly undertaken to introduce that evening.

MR. BLANCHARD said: I must begin by making an apology to the meeting. A paper as on other occasions should have been read, but unfortunately it was found that none was forthcoming, and at the last moment it seemed highly probable that there would be nothing to lay before the Society. It appeared to me, however, that it would be a shame if the members were to assemble without having a subject to discuss, and as the question of gelatine plates has of late occupied so much attention—your last three meetings having been largely engrossed by it—I thought that a few remarks concerning the failures I have had in working the process would lead to a profitable discussion, and might

* From the Society's Journal.

possibly elicit some information from members who have had experience in the gelatine process which would be useful to all of us. My attention was directed practically to gelatine plates in November last, when I was unexpectedly called upon to photograph an old lady and gentleman, both over eighty years of age, and from this cause presenting some difficulty to the photographer. The light was not good, but it was a case of necessity, as another opportunity would probably never present itself, and I tried a gelatine plate. My first experiment was a marvellous success and far beyond my anticipations. I have these negatives by me still, and I confess that I frequently look at them with fond longings. Regarding them by my after experience of the process, I can say that my success was something like that of the beginner in card playing—I was highly favoured by fortune. Never have I in technical excellence surpassed those first two negatives taken in November last, though I have tried many a plate since. After my first success I was so delighted by the shortness of exposure that I was led on to difficulties in this direction, having, I suppose, expected too much of the process. I then adopted rigid precautions so far as exposure was concerned, and I must say that some of the results have been perfectly satisfactory—more satisfactory, indeed, than I anticipated. I found that hurrying the development was a fatal error, so I waited patiently, using a minimised quantity of pyrogallie acid and ammonia, and generally to my satisfaction reaped the reward of my patience. The possibility, however, of doing so much by patient development tends to induce one to shorten the exposure in the hope of afterwards compensating the loss; development is prolonged, and then comes the well-known yellow deposit. This was my experience, and I found that the prolonged treatment of the gelatine with ammonia inevitably produced this yellowness. Some of the negatives I obtained were to all appearance, technically speaking, I thought—judging by a long familiarity with wet plates—absolutely perfect, and delighted me beyond measure. But when they came to be printed I was woefully disappointed, for owing to their peculiar colour they were of such a density that it was only with difficulty the prints were obtained from them, and even then were much harder than from the look of the negatives I should have been prepared to expect. I then went to the opposite extreme. I gave the full exposure, and by using less ammonia and shortening the development obtained negatives just as thin as the others with the short exposure and prolonged development were too dense. Then came the question, how to intensify these thin negatives and get them to print. I tried various methods of intensification with more or less success. Among others I tried pyrogallie acid and silver, and iron and silver; and though I had no difficulty in getting intensification with the latter, I was met with a new difficulty, for the deposit was uniform all over the plate, upon the halftones as well as upon the high lights, and the remedy was worse than the disease, for the intensified negatives took ten times longer to print than those which had had the prolonged development. Intensification of this kind was certainly no advantage, and it then became a question as to whether the yellow deposit could be easily and safely cleared from the negatives, and what method was best to use. I found on the whole that the best medium for performing this office was hydrochloric acid, and that it could be so used as to still preserve a certain amount of control over the result. But with the hydrochloric acid came another serious defect. The film of gelatine, which under the tedious process of development showed no signs of “frilling,” became loose and detached from the glass directly the hydrochloric acid touched it, and of course the picture was at once rendered worthless. A remedy for this defect, I found, however, consisted in drying the film before the hydrochloric acid was applied, and negatives treated in this way showed no tendency to “frill.” I am inclined to think that many of my failures with the gelatine process have been caused by my practice—which in my work with wet plates I have always considered a *sine qua non*—of using the full aperture of the lens. One of my “crazes” is, that a lens which will not bear every kind of fixed stop being punched out of the tube, and being used quite free and unobstructed, is worthless for my purpose. Of course I use stops, but I prefer to have absolute control over them, and hence, as I say, I must be able to use the lens with its full aperture. But even with a blackened tube there is a possibility of reflections backwards and forwards, and in the use of such a tube with gelatine plates these reflections may very likely have been at the bottom of many of my failures.

With a good many of my first results I got a number of spots or bubbles on the negative which troubled me considerably until a cure was suggested by Mr. Werge. I must confess that my first experience of Mr. Werge's method rather terrified me, for seizing the plate he polished it with such vigour that I had dreams of the possibility of a skating rink being constructed of a vast gelatine negative, so hard and so polished had the surface become. I have, I think, gone over all the sources of trouble which at this moment I can recollect, and I hope that some other member will supplement the few remarks I have been able to make. I might say, in conclusion, that with regard to the use of hydrochloric acid, Mr. Cowan in all probability will be able to offer some valuable suggestions.

Mr. COWAN, on exhibiting some negatives for inspection, said: In showing the negatives which I have submitted to-night, I had no idea of saying anything on the subject of the gelatine process. I might, however, after hearing Mr. Blanchard's remarks, say one or two things which occurred to me while he was speaking. With regard to the use of hydrochloric acid in removing the yellow colour, I should certainly say, that if anyone uses a strong solution while the plate is wet, he will be almost certain to have “frilling.” But if the plate, after being fixed, or after having been dried, be thoroughly soaked in a solution of alum, not the slightest effect will be produced by the hydrochloric acid. I have used it as strong as 50 per cent. My practice is, as soon as the plate is developed, to put it into a solution of alum, and allow it to remain there two or three minutes at least. It may then be fixed, but after fixing, again placed in the alum solution, and let remain there a considerable time—even half an hour. If this method be adopted there need not be any anxiety about frilling; indeed, the film, when dry, will be so hard as to bear very rough usage, and in many cases varnish may be dispensed with. I am inclined to think that the process of development may be simplified, and the working conducted with greater ease, by using a diluted instead of a concentrated solution of ammonia and bromide; and in practice I find it better to substitute for the old plan the making of three separate solutions. Thus starting with one solution of the ordinary proportion of bromide and ammonia to the ounce of water, have a second containing half as much again, and a third double as much to the same amount of water in each case. By using equal proportions of either of these solutions, and a double strength solution of pyro, the development is kept more perfectly under control. I do not find there is the least difficulty in reducing the density of a negative. Say that you have one that looks yellow: all that is necessary is to wash it in alum, and take it down with hydrochloric acid; but with respect to intensification, the matter is not so simple. I must confess that, personally, I have little faith in any of the methods yet known; at the same time, I remember taking a negative which was extremely thin, and asking a friend to intensify it, and in this case the intensification was perfectly satisfactory. I think that in any case of intensifying with silver, the shadows should be cleared with iodine, and then exposed to light.

Mr. PAYNE JENNINGS. I have had some experience with gelatine plates, and I think I may say I have met with exactly the same difficulties as those which Mr. Blanchard has mentioned. Certainly, I have met with the difficulties of intensifying and of frilling when treating a negative with hydrochloric acid to reduce intensity. I quite agree with him as to the necessity of drying the plate before placing it in the hydrochloric acid, and that under these circumstances frilling does not occur; and I also agree with Mr. Cowan, that a preventive is found in the use of alum. I question very much, however, whether hydrochloric acid is the proper agent to use under such circumstances. I am disposed to believe that, in reducing intensity, hydrochloric acid, in addition to attacking the high lights, also affects the shadows, and that we are still in want of a suitable agent for the reduction of overintense gelatine negatives. With reference to intensification, I am afraid that all present methods are uncertain. Sometimes it will happen that a negative is procured of a good intensity, but not what one would term the proper intensity, and the use of an intensifier does not act upon the plate in the way we would wish it to do. There can be no doubt that what we want in gelatine work is a reliable method of intensification, and also a good method of reduction of intensity. I have used for the latter purpose a solution of perchloride of iron, but there is the rather strong objection that it turns the film of a yellow colour throughout. At the same time, in some cases it reduces admirably, but the

colour is most difficult to judge, and very apt, without a very large experience indeed, to lead one astray. It has certainly one advantage over hydrochloric acid: it does not attack the shadows, but confines itself to the high lights; but, as I said, its colour is so yellow and peculiar that it must almost be pronounced to be unreliable. I question whether, after all, it is possible to get results from the gelatine process quite equal to those obtained from the wet. It has, I admit, a great advantage in its portability, and, of course, everyone should give it the fairest trial; but my experience is that it does not give such fine results as are possible with the wet. At the same time, I am not going to give it up, and am shortly going to test it with some large plates. Every photographer is, I think, in duty bound to try it to the best of his ability, and in every manner possible; but I cannot help feeling there is something in connection with the appearance of the finished print,—whether it be an advantage or disadvantage, I am not at present prepared to say,—a certain want of brilliancy, which is not apparent in the print from the wet plate negative, and I think that fooling of pleasure which one has in looking upon these dry-plate negatives is one that is deceiving, and will tell against them when the feeling wears away. My great hope is that, in spite of the present superior sensitiveness of the gelatine process, we may yet see collodion as sensitive, or more so. I would certainly prefer collodion to gelatine, if it could equal it in rapidity. However, I am about to take out some more plates, and may be able to speak better of it when I return. I shall certainly not give it up just yet. As I have already said, what I should like to see is a method of intensifying and also of reducing the intensity of gelatine negatives in a certain and satisfactory manner.

THE PRESIDENT. Has your experience, Mr. Jennings, extended to portraiture, or has it been confined to landscape?

MR. JENNINGS. To landscape entirely.

THE PRESIDENT. It is necessary to state this, as I believe the conditions differ considerably.

MR. JENNINGS. Yes, there is a good deal of difference in working those plates in the studio and out of doors. For portraiture, I have no doubt they are in some respects superior to collodion; but in landscape, they appear to lack something which wet plates possess.

MR. BROWNIGG. I have tried the gelatine plates against collodion, both being under exactly the same circumstances, and I must endorse Mr. Jennings' opinion that I could not get such favourable results with the former as with the latter. With all the trouble and inconvenience of the wet process, I yet prefer it to the gelatine. What struck me as a peculiar feature in the gelatine process is, that in the deep shadows you cannot produce that cleanness and detail that you can get in a wet plate, the exposure being given which the well-lighted parts of the subject required, and beyond which they suffered. In photographing a landscape, for instance, the dark shadows under trees are devoid of detail, and these dark portions do not appear to affect the plate in the same proportion as the high lights. In a landscape lighted by sunshine, where the high lights are very marked, this difference of sensitiveness is very apparent, and while the lighted portions may lose all force from over-action of light, the parts in shadow may be under-exposed. I tried three 12 by 10 plates under different conditions, the result bearing out this statement. No. 1, an oak in full leaf, ninety seconds' exposure: all the parts in good light were fully exposed, but there was almost no detail in the shadows. No. 2, a dark subject in a wood, ten minutes' exposure: good detail in the shadows, but the negative was worthless from over-exposure in the high lights. No. 3, another dark subject, ten minutes' exposure. In this view there were no strong lights, the result being a good negative, with the proper amount of detail in all parts. In the wet process, the development can be so humoured as to compensate this difference, and we all know what an iron developer is capable of in this direction. But in working the gelatine process, this power of modification cannot be used, and the picture suffers accordingly. It also seems to me that, in many of the photographs produced by the gelatine process, there is a great want of sharpness. I am not sufficiently versed in the mysteries of photographic science to be able to assign a cause, but I might suggest that the sensitiveness of the plates to a vivid image would, from the high light being destroyed, be liable to produce a want of sharpness. In albumen plates, for instance, when the exposure is long and the action slow, the sharpness is wonderful. This, of

course, may not be the proper solution of the phenomena, but I am certainly confident that it exists, and is especially noticeable in the case of a bright light.

THE PRESIDENT. You also have confined yourself to landscape photography, Mr. Brownrigg, in connection with gelatine plates?

MR. BROWNIGG. Yes.

MR. SEBASTIAN DAVIS. The effects described by Mr. Brownrigg are similar to what I have myself seen. With reference to the adaptability of the gelatine process to portraiture in preference to landscape work, I believe the over-sensitiveness of these plates to the high light is not so detrimental in the former as in the latter. In photographing a landscape, you have a number of deep shadows which you cannot illuminate; but in portraiture, on the contrary, you are able to modify your lighting in such a manner that this strong contrast is avoided. It is well known that the skill of the portrait photographer is shown in his management and mastery of the lighting. I am strongly of opinion, not only with regard to the dry, but with reference to the wet, that no process is quite satisfactory for landscape purposes unless you can develop all the details, and afterwards, if, and as, necessary, intensify. In going round the last Exhibition, and looking at the pictures stated to be from gelatine plates, I remember it was said, "These cannot be gelatine, because of the details in the shadows."

MR. WERGE. I am rather surprised at the observations which have been made by some of the gentlemen, and especially at the remarks which have fallen from Captain Brownrigg and Mr. Davis. These gentlemen have stated that there is a want of definition in the shadows of the plates prepared by the gelatine process. I must say that, so far as my experience has gone, quite the contrary has been the case. If there is anything which gelatine does, it certainly renders detail in the shadows. Of course, if you do not expose sufficiently you will get want of detail, but then the remedy is easy enough. I may remark, with regard to portraiture, that if the right exposure be given, there will be more detail in the shadows given by the gelatine process than by any other. Mr. Blanchard has already told you how to get rid of the bubbles—the soap-like bubbles—caused by the ammonia during the process of development. The removal of these bubbles by the hand is of course effectual, but the cleanest and neatest way, I think, is by means of a broad camel's hair brush, which answers admirably for the purpose. The camel's hair brush has also another advantage: it can be used to lead the developer over the film, and thus enable one to locally treat the negative, and in some measure to modify the development, a possibility which has not previously been claimed for the gelatine process. With regard to "frilling," it can certainly be obviated by the use of an alum solution, but the solution must be strong enough, and the plates immersed in it long enough. To be on the safe side, I think it is very important to apply the alum to every plate, because you never know how the plates are going to behave. Of course, there are instances in which plates have been treated with hydrochloric acid, and have not shown signs of "frilling," but it is very uncertain; while, on the other hand, if you invariably use the alum solution, you may immerse them in the hydrochloric acid to clear them as long as you like. I find that a few drops of the acid—say a drachm to half a pint of water—makes a solution quite strong enough to clear off the yellow stain. If this proportion be observed, I do not think it is likely that the half tones will be interfered with; at least, I have never observed it do so. With regard to developers, I may say I have used pyrogallic developers extensively, but on the whole I have a preference for a developer of ferrous oxalate. One of the drawbacks in the use of the latter is the slowness with which the plates develop; the exposure, however, is very uniform. For transparencies the ferrous-oxalate is also decidedly the best. The transparency I have brought with me to-night was made on a gelatine plate; exposed to the light of a jet of gas for fifteen seconds, and then developed by the ferrous-oxalate, the development occupying about four minutes, which on the whole is rather quick. The oxalate developer used was at least three weeks old, and had been used every day; indeed, I find this developer can be kept for two or three weeks without showing any sign of decreased power or slow working. It may be said to be as good as on the first day it was made. It is also an immense advantage in using the ferrous-oxalate that the bubbles, so frequent when a pyrogallic developer is used, are entirely avoided. The plates seldom need to be

treated with the alum solution, for there is no occasion to resort to hydrochloric acid. There are no yellow stains, and the appearance of the negative in colour is more like that of a wet plate. Indeed, the colour of the negative developed by ferrous-oxalate is all that can be desired. When a pyro-developer is employed it should be modified to suit the subject and time of exposure. When brilliancy is required, increase the strength of the pyro, and when softness and abundance of detail are wanted, diminish the quantity of pyro and increase the proportion of ammonia. From the same subject and time of exposure half a dozen different qualities of negatives may be obtained by modifying the proportions of the pyrogallic acid, bromide, and ammonia. Halation is observable on *thinly coated* gelatine plates only. If the gelatine films have the requisite opacity, there will be no signs of halation, but even this defect is rendered more visible by the use of a pyro-developer than by using a developer of ferrous-oxalate. The other day I gave two exposures on a thinly coated gelatine plate, cut it in two, and developed one half with pyro and the other with oxalate. The pyro-developed picture exhibited the appearance of halation in a much more marked degree than the oxalate-developed picture, though the time of exposure was the same on each portion of the plate. When thinly-coated gelatine plates are employed, they should be "blackened," especially for landscape work; but the simplest method is to select those plates that possess the requisite opacity without backing.

Mr. PAYNE JENNINGS. I think gelatine workers generally will not find any lack of half tone or detail, if proper care be taken to give the right exposure. The great fault in landscape work is, as I have said before, a certain want of brilliancy or sparkle in the high lights.

Mr. DAVIS. I think there is a little misunderstanding on the question of sufficient exposure in reference to what I said. Without a doubt, a full period of exposure gives all the detail in the shadows; but it is, I think, at the expense of brilliancy in the high lights.

Mr. COWAN. I have several times noticed that though many people use the same developer, they do not appear to get the same results. An experiment of this kind may be very easily tried. For instance, take a gelatine plate and expose it, and then cut it in half. Develop one half with a developer containing the full amount of ammonia; and then take the other, and develop with the same strength pyro, and the same amount of ammonia and bromide, but adding only a small proportion of it, until the high lights show well, and then gradually adding the remainder. The difference in these two plates will be, that while in the one you get flatness, in the other you will have brilliancy.

Mr. PAYNE JENNINGS. I should like to ask Mr. Cowan one question. We are, of course, all agreed as to the superior rapidity of the gelatine plates over the collodion ones; but I should like to know from Mr. Cowan whether he considers the best results obtained from gelatine are equal to the best results obtained from collodion?

Mr. COWAN. The best answer I can give to that question is this:—Some time ago two prints were shown to a member of the Council of the Photographic Society, and he was asked to decide which was the best. He did not know how they were done, nor whether they were from wet or dry plates. "There is no difference," he said, at first: "they are from the same negative." But after examination, he at last gave the verdict in the favour of the one which happened to be from a dry plate gelatine negative. The prints were also soon after shown to Mr. Wharton Simpson, and he, without knowing anything of the negatives, also decided in preference of the gelatine plate. The pictures, I may say, were portraits; the dry plate exposed one-tenth the time of the wet. The complaint of many is that the gelatine plates lack brilliancy, but I think it will be found that the method of using double strength solution of pyro, and gradually diluting it down with equal proportions of the ammonia and bromide solution, certainly favours brilliancy, and that the use of a weak solution of pyro, and the addition of the full amount of ammonia and bromide, at once tends to give flatness.

Mr. HERBERT BERKELEY. I am inclined to believe that the want of sharpness in the gelatine plates complained of by some gentlemen, is caused by halation and by the extreme sensitiveness of the gelatine film. As regards the absence of "frilling" in those plates which had been dried, I have found plates which have been developed become, after a time, even insoluble in hot water. I have by me some gelatine plates

which were prepared some three years ago, and were merely kept for experimental plates. The other day I was induced to clean off the films, using a solution of carbonate of potash for the purpose. The films lastly left the plates in a tough condition, not unlike collodion; but on holding the films over a gas-flame, they were found merely to break up, and not to dissolve. Plates which have been kept long, but not developed, also lose much in solubility. Plates well kept, I have found, are not so liable to blister as those newly prepared.

Mr. BOLAS. When gelatine is kept for a long time in a dry state there appears to be a tendency for it to become harder or less soluble in water. In the case of pure gelatine this action is extremely slow, a number of years being required for any noteworthy effect to be produced, but the presence of certain pigments increases its tendency to harden, and it is probable that silver bromide has a like influence. Gelatine preserved in a moist state often undergoes a reverse change, becoming more soluble, gummy, and soft.

Mr. WERGE. I have lately had a curious experience with a number of gelatine plates, which had been put away damp and had become mildewed. The plates were covered with a multitude of small spots, and were apparently spoilt. However, I thought I would see what could be done, and I washed the plates in clean water, of course in the dark room, and found that the spots disappeared. When the plates were exposed and developed, I found they produced as perfect pictures as any I have ever tried. There is no necessity to throw plates, which have been thus kept away; they only have to be washed and again dried, and they will keep and can be used as well as those newly prepared. I have observed, also, that these spotted plates can be developed perfectly in the ferrous oxalate solution without previous washing. If, however, the pyro-developer is to be employed, such plates must be washed previously, and may be exposed in the camera at once in the wet state, or dried and used under dry-plate conditions.

Colonel STUART WORTLEY. One of the peculiarities of the gelatine plates observable in practice is that they will frequently frill in certain parts of the process. If, however, the plates are immersed in an alum solution, taken out and thoroughly dried, almost anything can be done with them. There is something very peculiar in the gelatine plate if it has been thoroughly and completely desiccated, as after having been so treated you can moisten it again and carry on any other operation without fear—so much so, that if I get any yellow stain, it is only necessary to harden the gelatine film either by alum or alcohol, and then to remove the yellow stain by hot water. It should be borne in mind that there are a great many different kinds of gelatine plates in the market, and the treatment which will do for one kind of plate will not do for another. As a natural consequence, the experience of the photographer is dependent upon the kind of plate he has worked with. It is, therefore, not at all impossible that Mr. Brownrigg has been using a plate very different from that used by Mr. Blanchard. While this wide difference exists, it is evident that unless we can lay down some kind of standard as to what the gelatine process really is, we shall be giving advice to our friends totally unsuitable to the plates they have been accustomed to, and which may want another kind of treatment altogether. Some plates, for instance, are much more desiccated when sent out than others. There is one kind of plate which is very liable to the yellow stain, and another kind which is exceedingly free from it. It is plain, therefore, that each must have its own treatment. I have not been able to trace the yellow stain to its foundation, but I may say that I disagree with the principle of a developer without bromide. I have always found in bromide a great preventive of the yellow stain. In 1874 I published a formula in which I recommended the addition of gallic acid to the pyro developer. Gallic acid appears to have the same restraining effect on the gelatine plate as bromide, and does not at all favour the yellow stain. I do not know in what way it restrains the pyro, but that it does so there can be no question. The strength of gallic acid I used was 48 grains to the ounce, and added from 10 to 30 minims thereof per ounce. I have thought for a long time, with regard to this subject, that photographers do not pay a sufficient attention to the possible variations of the developer. A few days ago, Mr. Russell Mannors Gordon came to me, and I showed him a large series of gelatine negatives of a great variety of subjects. He said to me, "I do not suppose you used the same developer to the whole of these?" "No," I replied; and, as a matter of fact, I almost always use a different developer, ranging from 1 minim

of pyro solution up to 25 minims, so that I can use that which is suitable to the character of the negative. This point I do not think is sufficiently attended to. A certain formula is adhered to, the developer is invariably made of the same strength, and, whether the subject is well lighted or whether it is full of deep shadows, the treatment is the same. This habit, possibly, we have got into from our constant use of the wet process; but nobody who recognises what I have written for many years can fail to appreciate the extraordinary effect of a varying proportion of pyro on the resulting negative. I would undertake to take four subjects, each of a totally different character, on one large gelatine plate, and by varying the strength of the pyro developer, get equally good results in each case. If by using a weak developer it makes the development any longer, I do not see any disadvantage, because it makes the whole process more manageable, and enables you to get a better class of negative. With regard to intensification, I would say that if anyone wishes to intensify with pyro and silver, it is only necessary to add a minim or so of nitric acid, and the development may be proceeded with straight ahead without fear of any fogging in the shadows. Iodine used previously will answer the same purpose, but either that or nitric acid should always be used. Gelatine plates should also be washed far more thoroughly than is necessary for the wet process. I use a circular colander with some of the holes blocked up, so that the stream of water flows from the tap through the centre. By this means a constant change can be kept up for two or three minutes, and the plate be effectually washed.

The PRESIDENT, in closing the discussion, said he was sure the meeting would pass a hearty vote of thanks to those gentlemen who had spoken. The discussion had been a most interesting one, and was especially valuable because it had been so thoroughly practical. It was one of those discussions in which seed, as it were, was laid, which at some other time would be certain to bear fruit. In conclusion the President said:—I now adjourn the meeting until October the 4th, when these walls, I hope, will be covered by works of our own production. I can only say that the session we have just terminated has been a most successful one. There has been a capital attendance of members. An excellent series of papers has been read, and cannot but tend to the progress of photography. I trust that during the summer we shall have fine weather, which will enable photographers to do work which may perhaps adorn these walls at the Annual Exhibition.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY. An ordinary fortnightly meeting was held on the 18th of April, Professor VOGEL in the chair.

Herr CREIFELS, of Cologne, sent a portrait from nature which had been executed by direct printing from the negative. The process by which this was effected was first practically applied in the Royal Government Printing Office at Berlin. It consists essentially in coating an ordinary negative with a film of chromated gelatine, when prints can be made by means of the common press. Hitherto it has only been used for reproducing linear drawings; the portrait exhibited on this occasion showed a marked advance, inasmuch as the half-tones were perfectly expressed, and the gradation well maintained.

Appropos of this subject, the PRESIDENT remarked that at the present time collotype printing was being extensively carried on in America. Five gentlemen, having learned the process from Obernetter, are advertising it in America as a perfectly new process under the name of Artotype. Of course, as is the common practice in that country, the papers are making the most of it, so that those gentlemen have plenty of pupils who are rapidly extending the use of the process.

Herr VAN GRONINGEN sent from Holland the drawing and description of a drying box for gelatine emulsion plates, which, however, is nearly identical with the one exhibited by Professor Vogel at the meeting of the Society on the 21st February, the only difference being that the air, before being admitted into the box, is passed through a casing round the chimney, so that it is first heated by the flame burning in the chimney to maintain a draught, but without coming into contact with it. The air is, however, only slightly heated, as the casing exposes only a small heating surface.

Herr WROBT observed that a too highly heated current of air would be injurious to the gelatine plates. He attached great importance to keeping the temperature as constant as possible during drying.

Herr FAHLING said that in order to heat the current of air in the drying box he had kept a gas-burner alight in the admission tube, but had found that desiccation was much less expedited by this arrangement than he had expected. One peculiarity was, that the uppermost plates, which are farthest removed from the gas jet, were the first to become dry. He had also remarked that the plates prepared with Obernetter's emulsion dried quicker than any other gelatine plates.

Professor VOGEL pointed out, that by burning gas, water would be formed, and that therefore Herr Fahlings' current of air, though heated, would be charged with the vapour of water, which would fully explain its want of drying power. As regards Obernetter's plates, he quite agreed with Herr Fahlings; a glance at the list of chemicals used in their preparation would suffice to lead one to expect that they must dry quicker than pure gelatine plates. In any case, however, the best means for promoting desiccation is to dip the plates into alcohol, as has already been often explained.

The PRESIDENT showed an achromatic combination by Steinheil having a large angular aperture, an instrument which, though it is by no means unknown, had never been tried by any of the members present. When the cap is closed, it is very much like an orthoscope of about two inches in diameter; but when the objective is removed, some surprise is created at observing that the lens is not larger than a pea. The speaker expressed a very favourable opinion of the instrument; in his own experience it gives an image of from seven to nine inches in diameter, corresponding to an angle of more than 90°, quite sharp up to the outer edge. The field is, however, much larger drawing out the tube 12·1 centim.: the limit of the illuminated field on a 15-inch plate could not be discerned. Additional advantages of the instrument are, that it can be rapidly focussed, and that it gives no light spot.

The PRESIDENT further drew attention to the proposed exhibition at Sydney, and to the offer of the Government to convey, insure, and take charge of the goods of German exhibitors free of charge. He believed that it might be important for photographers to exhibit largely, as there was sure to be a good market in Australia for photographic reproductions of oil paintings and portraits of celebrities.

Herr LEYDE, of Nurnburg, sent a collection of collotype reproductions of fabrics deposited in the Bavarian Industrial Museum. They are printed in the colours of the originals, and have a very natural appearance.

Herr SCHAARWACHTER showed an imitation stone seat for use as an accessory at sittings. It was made by Mr. Seavey in wood, and bears the stamp of his well-known manufacture.

PHOTOGRAPHIC SOCIETY OF VIENNA.

A MEETING was held on the 13th of May, Dr. E. HORNG in the chair.

Dr. Steinheil, the celebrated optician, was present as guest.

After the minutes of the last meeting had been read and confirmed, and after the admission of four new members,

The CHAIRMAN announced the death of one of the original members of the Society—Herr Ludwig Angerer. He described briefly the services which the deceased had rendered to photography, and expressed, with the manifest concurrence of all present, their deep sense of the loss which the Society had experienced.

The CHAIRMAN directed the attention of the meeting to a collection of fifty beautiful photographic views in the Austrian Alps, sent by Herr Alois Beer, of Klagenfurt, and stated that the photograph of the avalanche at Bleiberg, exhibited at the last meeting by the same artist, had been presented to the Society. He also referred approvingly to a rich collection of remarkable helio-engravings, which were shown, and had been given to the Society by Herr Adalbert Franz.

Herr KRON sent for exhibition a number of cabinet views of horses in motion, taken by his new instantaneous process. In connection with this subject, the President also showed some of the instantaneous photographs of horses in motion taken by Mr. Muybridge on the race course of the ex-governor Leland Staudford, California, by means of a very intelligently-constructed electrical apparatus. He further stated that Mr. Muybridge had expressed the intention of extending his experiments to dogs and other animals so soon as he had completed some contemplated improvements, as well as of sending some communication on the chemical portion of his process.

Herr CREIFELD, of Cologne, sent for exhibition a portrait printed in a lithographic press direct from the negative, and

offered to sell his process, in case one hundred persons would each subscribe £5.

Dr. A. STEINHEIL brought forward a number of his new objectives, and expressed a wish that they might be tried by the committee of the Society, and the results of their experiments communicated to him. It was arranged that the pictures taken with these objectives should be shown at the next meeting of the Society.

Imperial Councillor MARTIN read a paper urging the importance of establishing in Austria a regular system of photographic observations of the solar surface. He had been led to entertain this project from reading in the provincial journal *Sirius* the description of a telescope which seemed peculiarly adapted for making such observations. The instrument in question was to be found in the private observatory of Herr N. Von Konkoly at O'Gyalla, in Hungary. A numerous experience had convinced this gentleman that the ordinary telescopes used in solar observations became so heated internally as to raise the temperature of the instrument some 10° or 12° , which would not fail to have a deteriorating influence on the purity and sharpness of the image. His new instrument, therefore, he had had constructed of parallel bars to replace the tube, so that the inner space was not liable to inequality of temperature. With it he could take a picture of the sun of 134 millim. diameter, and Herr Martin was anxious that M. Janssen's experiments should be repeated with the instrument. The meeting, at the instance of Herr Martin, resolved to propose this arrangement to Herr Von Konkoly.

Herr MARTIN further expressed the opinion that the production of successful photographs of the moon, would greatly contribute to the extension of our knowledge of that heavenly body. The more Rutherford's lunar photographs are studied, the more the details become apparent, and the person examining them obtains a continuously increasing insight into the constitution of the moon's surface. Unfortunately the lunar rays have a low actinic power, consequently the exposure must be an extended one. Now with the most accurately constructed clockwork for driving the equatorially mounted instrument, it is impossible on that account to prevent blurring of the outlines. It is therefore of the utmost importance to increase the sensitiveness of the plate, and Herr Martin thought it possible that Herr VON KONKOLY might allow gelatine emulsion plates to be tried in his new instrument.

A third subject of Herr Martin's communication was the employment of iron oxalate as a developer for gelatine emulsion plates. He drew attention to the fact that many years ago another salt of oxalic acid—the ammonio-oxalate of iron—had been used in photography, and he exhibited a positive taken by his friend, Dr. Glickh, by this means. A piece of ordinary paper is impregnated with this salt, exposed under a negative, and developed by floating it for a few seconds on a dilute solution of a silver salt; fixing is effected by copious washing. The speaker handed round some samples of the salt, and

Capt. TOTU promised to experiment with it in the course of the summer.

Dr. HORNIG observed that the ferrous salt of oxalic acid was used in the modern process of platinotype.

A paper by Dr. EDER and Captain TOTU was laid before the meeting; it contained an unfavourable account of the behaviour of chrysoidin as a material for colouring the window panes of the dark room, and also a reference to Captain Abney's investigations of variously coloured glasses. Relying on the results of spectroscopic examination, a combination of aniline red and corallin was recommended for staining the globes of the lamps in the photographic laboratory, and a combination of cobalt blue and copper red glass for the window of the dark room.

Appropos of a paper by Dr. J. SCHNAUSS on the results of his experiments with Obernetter's gelatine emulsion plates, a very interesting discussion on gelatine emulsion arose.

Herr HAACK stated that with some plates placed at his disposal by Herr Moll he had obtained excellent results at four o'clock p.m. on the 11th of April, in a fourth of the time that would have been required for a wet plate.

Herr JAFFE handed round several negatives, and complained of the appearance of a red fog, although both the camera and the changing box were quite impervious to light.

Dr. SZEKELY remarked that the English plates had given him unsatisfactory results; and

Herr KRAMER informed the meeting that Dr. Beck had had reason to complain of the want of adhesion shown by the English plates, but that Herr Albert was quite satisfied with them.

Herr LUCKHARDT explained that he had found the plates prepared by Obernetter himself denser than those made by pouring on them his collodion, and remarked that the necessary precaution of warming the plates is not mentioned by Obernetter. With reference to the want of adhesive power mentioned by Herr Kramer,

The PRESIDENT expressed his regret that some of the faulty plates had not been brought for examination. He also observed that the red fog had already been met with in English plates, and had been attributed by Mr. Bennett to an excess of silver nitrate.

Dr. SZEKELY mentioned that he had often observed that the film of gelatine expanded over the edges of the plate, notwithstanding the latter having been varnished.

Talk in the Studio.

THE SOUTH LONDON EXTRA MEETINGS.—In the announcement of extra meetings of the South London Society at the studio of Mr. Brittlebank, the address of the studio was, by a printer's error, omitted. We now subjoin it. No. 4 and 5, Tottenham Court Road, W.C., is the address. A successful and pleasant meeting was held last week, and on the evening of the 25th Mr. Fry was, we understand, to give a demonstration of the development of rapid gelatine plates.

GELATINO-BROMIDE PLATES.—We understand that a demonstration of the working of these plates, with practical details of intensification, and many other details, will be given by Mr. Samuel Fry on Thursday evening next, July 3rd, at eight o'clock, in the rooms of the Society of Arts, Adelphi, when photographers are invited to be present.

To Correspondents.

N. B.—Add a few drops of 20-grain solution of carbonate of soda to the bath, and shake well. The precipitate of carbonate of silver formed will carry down with it the colouring matter; allow this precipitate to remain at the bottom of the bottle, and shake up the solution with it at times. This we have found to keep a printing bath clear very satisfactorily. 2. It is somewhat difficult to mount prints on stout paper without cockling. If skilfully managed, it may be done by using very dry glue, or by using the mounting solution made by dissolving gelatine in weak alcohol. If the mounting paper be made as damp as the print, paste may be used.

W. T. SMITH.—See answer to N. B. above.

J. S.—We are not familiar with the precise cause of the defect with which you are troubled, but we are much inclined to attribute it to floating scum on the surface of the bath. If we can find any other probable cause we will answer at a future time; for the present, we have no more probable suggestion to offer.

G. B. D.—For summer use, we have always found a 30-grain silver bath strong enough for negatives, whilst for winter use we prefer a 40-grain bath. A 20-grain bath is too weak. The effect of a weak bath is to form the layer of iodide and bromide of silver on the surface of the film instead of in it, and the image is in such case at times removed in fixing.

R. M. F.—If the sensitive paper is "bone dry" when placed in contact with the negative, it is apt to give a flat poor image in printing, which no amount of toning will bring to a good colour. Of course, it must not be moist, but not absolutely desiccated.

W. S. S.—The proper remedy for crappiness in the negative is a change in the sample of collodion used. The general cause of such crappiness is the presence of too much water in the collodion from the use of alcohol insufficiently rectified. Sometimes it proceeds also from the use of an imperfect sample of pyroxyline. If it is not convenient to change the sample of collodion, matters may be mended by allowing the film to set well before immersing the plate in the bath, and rocking the plate carefully so as to secure a very even film. But the true remedy is a better sample of collodion.

F. BATHURST.—There are two or three difficulties in printing on wood for the engraver. If a film like collodion, gelatine, or albumen be used, this chips and tears up under the tool, and is very inconvenient for the engraver. Moreover, the use of aqueous solutions is injurious to the surface of the wood. The best plan, therefore, is to transfer an image to the surface of the wood, and the best transfer is one in fatty ink: a lithographic transfer, in fact. This is produced by printing a film of bi-chromated gelatine on a sheet of paper under a negative; then inking its surface with a proper roller and ink, and finally immersing in warm water. This removes the unaltered gelatine and the ink on it, leaving only the insoluble image duly inked. This inked image is easily transferred to wood by slight pressure. For full details, see some of the many articles on photolithography which we have published.

The Photographic News, July 4, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

MR. SYMONS' MIRAGE PHOTOGRAPH—WOULD-BE DISCOVERERS—THE LATE LUDWIG ANGERER, OF VIENNA.

Mr. Symons' Mirage Photograph.—We have made a careful examination of the mirage photograph which Mr. Robert Symons, of Tenby, has sent us. From that gentleman's note in these columns a fortnight ago our readers have learnt the circumstances under which the picture was secured. The weathercock on Tenby Church was under repair, and Mr. Symons, in his desire to secure a representation of the operation, the ladders and mode of ascending, the steeple-Jack, &c., forthwith brought a camera to bear upon the structure. In one of the negatives thus obtained—taken, as the photograph tells us, at 6.19 precisely—there appears an ill-defined streak just below the weathercock. You can make nothing of the streak looking at the picture in the ordinary manner, but if the spire is turned upside down, we have a clear representation of a boat. The craft resembles a life-boat in shape, for it is high out of the water, and there can be little doubt that it is a representation of such a vessel, or of a ship newly launched—floating, that is, much higher in the water than vessels usually do. From the fact that there are flags at the fore and stern, and something like bunting in the centre of the vessel also, there can, indeed, be no doubt that it is a picture of a vessel newly launched, and we think Mr. Symons may be congratulated on being the first to photograph that most romantic of phenomena, the mirage. The prow of the ship is almost sharp, and so, too, is the flagstaff at the fore; but of the flags, that at the stern is the most definite. The hull is an inch long, or, to speak more correctly, $\frac{2}{3}$ of an inch, and the stern flag must have been a very large one, since it measured $\frac{3}{4}$ of an inch. These proportions go to prove that Mr. Symons is correct in his assumption that the haze picture he has secured is the reflection of a gunboat launched at Pembroke Dock, and which, it has been ascertained, was lying upon the water at the time in question. The cloud, or vapour, over Tenby Church must have been of a nature to receive reflections, and the camera must have stood at such an angle as to receive a reflection from the direction of Pembroke Dock. Another circumstance which points to the luminous character of the vapour is the fact that on the same picture a shadowy cone—or one can almost discover two cones—which are evidently silhouettes of the Tenby spire itself. Of course, the sceptical will hesitate a good deal about the genuineness of the record, and point out—as, in fact, we did in first dealing with the matter—that there are several ways in which ghost-like photographs of this nature might be secured. A close inspection under a magnifier, as well as an examination of details, leads us to believe that the picture before us is that of a genuine mirage, while it is a fact that on many parts of our coast—near the marshy land of Landguard Fort, for instance—the optical phenomenon of a ghost-vessel suspended upside down over the real one is no uncommon occurrence at all.

Would-be Discoverers.—Every now and then we notice that some of our brethren wax very clever in the matter of processes. When collodion emulsions were the order of the day, and the method of preparing them had been thoroughly detailed and explained in our columns and in those of our contemporaries, there came up certain special processes, of which the formulæ were kept secret, their advantages being stated to surpass those of the ordinary published methods. When carbon printing began to be generally adopted some half dozen years ago, glass and collodion being the chosen mediums for developing, we heard again of specially improved methods that gave people much finer pictures, and permitted

them to rely upon the tissue in a manner they had never been able to do before. We do not refer particularly to Lambert-type, but rather to the many secret plans of printing advocated by those who were rather in the rear than in the van, and who, having read time after time details in the journals, at last began to practise the thing for themselves.

They were astonished at the simplicity of the process—so much so, indeed, that they could not resist the temptation to astonish others. It is now the turn of the gelatine process. The process has been fully discussed in the societies and in this journal, and if any one desired to prepare plates for himself, if he had any practice in such matters, he has merely to refer to our columns. If he wishes to purchase, there are several firms who, without making much pretence or mystery over the matter, will supply him with plates. What we desire to deprecate, however, is the arrival of late workers in the field, who have no pretensions to have originated or contributed any important modification to the production of gelatine plates, and who imagine that other people are like themselves, very backward in appreciating the advantages of gelatine bromide. By importing a little mystery into the matter, and pushing forward their own views, they doubtless imagine that the unwary may mistake them for the discoverers of the process, or at any rate for men who have at last succeeded in reconciling theory with practice. Probably there is little harm done, after all, for it is only the veriest tyro that could possibly be taken in, and in the end our plausible friends carry on the pastime for a very short time. Thus those who were loudest in recommending the universal adoption of carbon printing for small portraiture, who demonstrated its extreme simplicity on repeated occasions, and who, according to their own account, developed a couple of dozen cartes on one plate at one time, all good alike, confounding and confusing those who had been steady carbon printers for years—these hot-headed enthusiasts, we say, were the first to throw up the printing of photographs in pigments, and to revert to their jog-trot method of working. So it has been, and so it will no doubt be again, though seeing how little photographers in general are to be deceived, it does seem strange that there should be any incentive to repeat the comedy so frequently.

The late Ludwig Angerer, of Vienna.—Herr Ludwig Angerer, who has just died at Vienna, and enjoyed the appointment of Court Photographer, was for a long time in the front rank of Austrian photographers. Lately, there cannot be a doubt that he has been eclipsed by Fritz Luckhardt, but fifteen years ago he was *facile princeps* in Vienna. His beautiful work, especially in the form of cabinet, attracted at one time considerable attention, and he was, we believe, the first, or one of the first, to whom the Emperor extended his favour and patronage. Herr Ludwig Angerer had considerable faith in the employment of coloured rays reflected on the model during the exposure of the plate, and made several experiments with a view to shortening the time of sitting. His results led him to believe firmly in blue rays, and he went so far as to have a large studio erected, fitted entirely with blue glass. We had the pleasure of visiting this studio some years ago, and although we could not but testify to the softness and harmony of Herr Angerer's work, we had considerable doubt as to the charming qualities in the pictures being due to the azure illumination on the subject. Indeed, we rather think that Herr Angerer afterwards inclined to the belief that no advantage was gained by his blue panes of glass, although they certainly had no detrimental effect, as his pictures bore testimony. Herr Angerer took little interest in matters outside his own occupation, and rarely, if ever, spoke at the meetings of the Vienna Photographic Society; neither, do we think, did he contribute to photographic literature. He was, however, highly esteemed among his brethren as one of the most capable of photographers of the *Kaiserstadt*.

THE SINGLE TRANSFER PROCESS FOR SMALL WORK.*

HAVING the power by means of the reversing mirror to produce negatives which can be printed by the most simple of all processes, viz., the single transfer, a short account of the operations will at once show how easily and rapidly permanent photographs equal to silver prints may be produced.

The mode of making the tissue sensitive to light is so well known, by means of the instructions sent out with every band of the Autotype Company's tissue, that it will not be necessary to do more than to call attention to the necessity that exists for satisfactorily drying it after sensitizing. The best drying room is undoubtedly an apartment warmed by an ordinary English stove, which, giving the smallest amount of heat with the greatest amount of ventilation, is exactly suited for drying tissue; if a fire has been burning in the stove during the day, and allowed to die out in the evening, when the sensitizing of the tissue generally takes place, the arrangement will be perfect, and by the next morning the tissue will be in a most excellent condition; should, however, it be inconvenient to have a fire, one of those gas stoves known as "cheerful gas stoves" will answer admirably; one can be bought for about a pound, and if the flue-pipe is taken just into the chimney, all the fumes will be carried away, and a gentle dry heat with a proper amount of ventilation be secured for any length of time.

Having the tissue properly dry, the most important thing now is to keep it so. Whatever speculations there may be as to the causes of insolubility in tissue, they may be all summed up, if the tissue is properly made, in two words, *light* and *damp*. If tissue is kept from the light, and prevented from absorbing moisture, it will remain perfectly good and soluble for weeks: as far as light is concerned, it requires about the same care as silver paper; as far as damp is concerned, it requires far more; the precautions to be taken are simple enough, but they must not be neglected.

When the tissue is taken down, after being thoroughly dried, it should be cut up into convenient sizes and placed in a tin tray made with a heavy lid to drop just inside the tray, on the same principle that tobacco is kept moist in the old-fashioned lead tobacco pots. The lid may be made of dry wood, and a piece of stout sheet lead or zinc screwed to the underneath side (the screw heads must be countersunk, of course); this lid will go inside the tray, and, being weighty, will keep the tissue pressed flat and the air away from it; the lid should have a strong knob or small handle on the upper side. In such trays, the tissue should be kept both after sensitizing and after exposure to light under a negative, if the development does not take place at once. In addition to this, the printing-frames must be dry, dry blotting-paper should be used as pads, and care be taken that it does not get damp: it should be taken out, and it and the frames put before a fire occasionally, especially in damp weather.

If these three points are attended to—viz., to thoroughly dry the tissue, to keep the tissue dry, and to have dry pads and printing-frames—carbon printing has no difficulties; if these are neglected, the production of uniform and good prints is hopeless. The action of the light upon carbon tissue being invisible, the progress of the picture cannot be observed from time to time as it can in silver printing, and this might appear a startling difficulty; it is not really a difficulty at all, for, by the use of the photometer, which is put out at the same time that the negatives are exposed to the light, any number of photographs may be accurately printed when the operator has had a little experience in marking the negatives with the tints they require. Mr. Woodbury has just brought out the best and most ingenious photometer that has yet been introduced.

* Autotype Notes.

The pieces of tissue being printed and in their tray waiting for development, the next operation is to place them in contact with the paper upon which the picture is finally to rest. This paper is called single transfer paper, and is sent out by the Autotype Company in bands of 12 feet in length and 30 and 36 inches in width, suitable for large work; and a very fine paper in sheets, about the size of albumenized paper, having a beautiful surface and specially adapted for portraits and small work.

The first operation is the transfer for development. To effect this, the insulated tissue is immersed in cold water, together with a piece of the single transfer paper somewhat larger than itself; the two surfaces are applied to one another under water, and both drawn out together the moment the tissue loses its rigidity; the effect of which is to bring the surfaces into contact without air-bubbles intervening. They are then placed upon the sheet of zinc, the tissue uppermost, and the squeegee applied as follows:—Place two fingers of the left hand upon the edge of the paper, and with the india-rubber scraper or squeegee in the right hand, with a motion from left to right, *scrape* out the water from between the surfaces of the pigment paper and plate. Do this two or three times, if necessary; then repeat the operation in the opposite direction, so as to drive out all the air from between the surfaces. This can be done with perfect certainty after a little practice; but if it be not done thoroughly, the process fails. When the sheets have been thus forced into intimate contact, they should be placed between bibulous boards for a few minutes, or may be hung up to a string with American clips; by the time about a dozen pictures are thus transferred, the first ones will be ready for the next operation, the development.

This is effected by immersing the united papers in one of the trays filled with water, the temperature of which may be from 90° to 110° Fahr. In the course of a few seconds a partial solution of the gelatine compound will take place, evidenced by portions of the coloured gelatine exuding from the edges of the pigmented paper: when this occurs, the paper upon which the pigmented tissue was supported may be gently drawn away from the transfer paper, which will be left with most of the coloured compound adhering to it, and presenting the appearance only of a black, slimy-looking sheet. If the water then be allowed to pass over the surface, lavng it gently with the hand, the picture will gradually appear as the excess of colour is dissolved away. If the exposure has been correct, the picture will appear with all its details to perfection.

Errors in Exposure.—If the exposure has been too long, the gelatine compound will dissolve with some difficulty, and the resulting picture will be heavy in the shadows, and the lighter tones will be wanting in clearness. If, on the other hand, the exposure has been insufficient, the compound will dissolve away quickly, leaving the developed picture bare and chalky in the high lights, and lacking vigor in the shadows.

Of course a proper exposure ensures the most perfect result, but there is an advantage attending this process, that an under or an over-exposed picture may be made fairly presentable by modifying the development, using hotter water than usual in the case of an over-exposed print, and which may be further reduced by soaking for a short time in water at a higher temperature; and, on the other hand, an under-exposed print may often be saved by removing it, when partially developed, from the warm water, and continuing the development in cooler water.

The picture should always appear a little lighter in the water than it is wished for finally, as it dries up a shade or two darker. The development being completed, the print should be transferred to another trough filled with cold water, which at once arrests any further action upon the gelatine, and it is now ready for the fixing.

Prints thus produced do not really require "fixing," using the word in its proper sense, as the picture, being produced

by the formation of insoluble gelatine, would not be liable to any further change whatever; but in many cases some of the sensitizing salts are left in the paper, which mere soaking in water does not readily remove.

To effect the removal of these salts, place in an earthen-ware pan a solution of common alum of the strength of one part of alum to thirty parts of water, and allow the print to remain in this until every particle of yellow colour caused by the excess of chromic salt has entirely disappeared; the alum solution, having a very strong solvent action upon the chromic salt, will soon accomplish this; but it is very important that this operation should be fully completed, otherwise the germs of deterioration and decay are certainly left in the print. Allow the print to remain in the alum some time after the yellow tint has disappeared, then transfer it to another tray containing perfectly clean cold water, allow it to remain long enough to wash all trace of alum out of it, then rinse with a little cold water, and hang up to dry.

It will thus be seen how really facile is the process of carbon printing in its simplest form; the pictures, when dry, can be mounted, spotted, rolled, or burnished exactly like silver prints. If a very high gloss is desired, similar to an enamelled silver print, it is very easily obtained by waxing a plate of glass, coating it with enamelling collodion, washing the ether and alcohol away, and upon this laying down the carbon print whilst it is wet; if this is mounted whilst still on the glass, as enamelled pictures are, it may be stripped off when perfectly dry, and will have a most perfect and brilliant lustre.

In practice there are two things that a carbon printer must specially attend to, first, to thoroughly dry the tissue; and second, not to let it get damp again until it is placed upon the transfer paper.

A NEW METHOD OF MEASURING THE CHEMICAL INTENSITY OF THE SOLAR RAY.*

In a recent paper read at a meeting of the American Chemical Society the presiding officer, Dr. Leeds, gave the results of a series of experiments upon the deportment of metallic iodides, other than the salts of silver, and while his investigations are more especially of interest to chemists, yet they involved certain points which illustrate some of the phenomena of photography, and possibly may have a bearing upon future development in photographic art. It is probably a fact known to many photographers that the test for the presence of nitrites and chlorine in solution consists in the addition of some soluble iodide, usually that of potassium, together with some starch, when if either of the above-mentioned bodies are present, a blue colour will be developed, the time of whose appearance and its intensity depending upon the amount of nitrous acid or free chlorine in the liquid under examination. Frequently it is of great importance to determine whether the hydrochloric acid sold by the manufacturer as chemically pure contains free chlorine, or the nitric acid, C. P., contains nitrous acid. This is almost always the case if the nitric acid has been for any length of time exposed to light. In the course of such an examination, 1 c. c. of the acids being diluted with 1 litre of water, and 1 c. c. of a 10 per cent. solution of potassium iodide and 5 c. c. of starch water added, Dr. Leeds noticed that the amount of iodide of starch formed varied in different trials with the same acids, and that after the solution had been decolorized by a standard solution of sodium hyposulphite, they again acquired a blue colour on standing. In one series of experiments, this repeated liberation of iodine went on from Oct. 27th to Jan. 3rd, the solutions being decolorized by the hyposulphite thirteen times during the interim. It is hardly needful to state that the iodide used

was made with great care, and contained neither free iodine or any alkaline iodate.

These unlooked-for results gave rise to the suspicion that the light played a part heretofore unsuspected in the operation of these tests. To verify this hypothesis, parallel series of solutions containing to 1 c. c. of potassium iodide, 1 c. c. of sulphuric acid (free from nitrous acid) and 5 c. c. of starch, 20, 50, 80, 100, 150, 250, and 500 c. c. of water, were prepared and placed one half in total darkness and one half in sunlight respectively. For a long time the results of these trials did not agree very perfectly, although there appeared to be in both cases a distinct law governing the amount of change. In the dark the amount of iodide of starch formed was as the degree of concentration, the 20 c. c. solution containing most at the expiration of twenty-four hours, while the 500 c. c. solution was scarcely, if at all, affected during the same interval. In the sunlight colouration began at the end of a few minutes, and at the expiration of half an hour most or all of the starch present had been precipitated in the form of iodide. The law of decomposition appeared to follow the degree of dilution in this case, the amount of iodide set free being greatest in the solutions which were weakest. The contradictory results, however, disappeared when comparison tubes of uniform bore, and made of the same kind of glass, were substituted for the bottles of various make, sizes, and forms at first employed. When this was done, the amount of change was rigorously proportional to the dilution, or, in other words, to the volume, which again, in tubes of uniform bore, kept always at right angles to the solar ray, would be directly as the surface of exposure. Furthermore it was found on trial, what would naturally be inferred from the foregoing, that with solutions of the same degree of dilution, the amount of change was directly proportional to the length of exposure to the sun's rays when the intensity of the sunlight was constant, or directly as the intensity when this experienced an increase or diminution.

Upon these laws a new method of actinometry has been founded. The usual method, originally proposed many years ago by Dr. John W. Draper, of New York, and afterwards elaborated by Profs. Bunsen and Roscoe, consists in determining the amounts of hydrogen and chlorine gases which are made to combine by the solar ray, or other source of illumination possessing a sufficient actinic power. This beautiful method has the disadvantage of requiring complex apparatus, and of necessitating great skill in manipulation. To determine, in the method proposed, the amount of iodine set free can be rapidly performed according to familiar modes of volumetric analysis.

[A tabular illustration of the mode of working out this process follows, which it is not necessary to reproduce here.—Ed].

SELECTIONS FROM THE DIARY OF AN ARTISTIC PHOTOGRAPHER.

BY J. P. RANDOLPH.*

I HAVE often wondered why the photographic fraternity in general have not given more attention to instantaneous photography; which branch, if properly prosecuted and in the right direction, will pay better than can be imagined. The principal drawback to this line of business is, as far as I can learn, the want of sensitiveness in the chemicals, and some *modus operandi* of shutting off the exposure in an instantaneous manner, as the name would imply. Now, I have given this much study, and have had some experience, and I propose to lay down certain rules and give formulas for preparing chemicals that have not failed to work with very good detail, instantaneously in every sense of the word; when I say instantaneous, I do not mean one, two, or three seconds,

* *Anthony's Photographic Bulletin*.

* *Photographic Rays of Light*.

but of sufficient rapidity to photograph a trotting horse travelling at a rapid gait. Should all follow my directions explicitly, they cannot fail to do likewise.

At a certain period in my life I made viewing, or outdoor work, a speciality, and, of course, had many different models to photograph; but the case which I propose to lay before your notice is simply the following:—

I was working in Lexington, Ky. My principal business was landscape photography, which, as I have said, I made a speciality. One day, a gentleman came to me and desired a picture of the celebrated trotting nag, "Lady Drew," said picture to be made while the mare was trotting at a smooth gait, in harness, to a sulky. This was rather a hazardous undertaking, nevertheless I repaired to the race-course on the first bright day. The track was of circular form, one mile around, and as level as any floor. I set my instruments just sixty feet from the track, with the sun to my back, which, of course, would then shine upon the subject. I then had the jockey to ride up on the track in front of my lens, and stop until I procured the focus. After doing this, I particularly cautioned him to drive as near the same place, from which I focussed, in passing my lens, during exposure, and also to hold the reins very tight, so that the head of the animal would be in the proper position, and have the same motion as the body.

I then coated an 11 by 14 plate with a collodion prepared as follows:—

Alcohol	2½ ounces
Iodide lithium	16 grains
Ether	1½ ounces
Bromide lithium	7 grains
Cotton	6 "

After which, I immersed the plate in a bath which I prepared as follows:—

Pure nitrate silver	1 ounce
Distilled water	13 ounces

Iodize with iodide of silver prepared in the ordinary manner, and add two drops of C. P. nitric acid to each thirteen ounces of solution. This bath and collodion harmonize well, and give beautiful results. The plate must be immersed in the bath not less than four minutes. I now adjusted my shutter or exposing slide, which is very simple, and made as follows:—

Procure two pieces of scantling three inches square, so that when standing upright with one end on the ground the other end will rise about six or eight inches above the top of your box. Attach feet to these uprights, similar to a screen stand; now in these uprights smoothly cut a groove so that a polished walnut board will slide along the groove without impediment; allow the grooves to run from the top of the uprights to within six inches below the mouth of the lens. After doing this, place it in front of the instrument, leaving one inch space on each side of the lens. Now fasten together both at the top and the bottom; simply nail a cleat on one side, at the top; at the bottom, on both sides, thus making the stand very solid. The next operation is to procure a half-inch walnut board that will slide in the grooves before mentioned: this board must slide smoothly and with rapidity, when started from the top of the grooves. The length must be governed by the height of your box. When the board is at the bottom of the grooves, the upper part must cover the mouth of the lens, and *vice versa*, and must be close enough to slide in simple contact with the brass-work, but not so compact as to cause the box to be disturbed when the slide is in motion. The opening to be cut in this board must be according to a person's desire to give short exposure to the sky. A triangle with the broader portion at the bottom will act satisfactorily. A round opening, the size of the mouth of the lens, will give an equal exposure. To procure grand cloud effects, cut a

half circle similar to a half moon, with the larger or oval part at the top; this gives short exposure to the foreground. The half circle must taper to a point at each end, pointing toward the ground when in the grooves. Now procure an article of wire that will not too easily bend, and of sufficient length to reach from your box to the track, at an angle of forty-five degrees, on the side of your upright exposing stand. Screw several large hooks, similar to screw eyes, run the wire through these hooks to the top, then bend it in a square manner so it will reach the centre of the walnut board that slides in the grooves. In this board fasten a small hook, so that when the wire is holding the board in the proper position, and at the least movement of the wire, the hook will be detached and the drop will fall. Now run the wire to the track at an angle that will cause the horse and sulky to be on a parallel line with your lens when the fore-wheel of the sulky strikes the wire. As the wheel strikes the wire the drop will fall, thus giving an exposure without assistance.

The horse must be a sufficient distance from the place of exposure in order to allow the animal to procure a smooth, easy, and steady gait. The proper position in which to place the wire on the track can easily be ascertained by experimenting with the horse and sulky before exposure. This is the most useful method that I have ever tried, and I am positive it has never before appeared in print. For photographing cars or locomotives, the wire must be dispensed with, when the hand acts as the dropping medium.

The developer I use is the finest I have ever tried. By experimenting with different formulas I think I have found the bona fide article. It is prepared as follows:—

Proto. sulphate of iron	1 ounce
Sugar of lead	12 grains
Water	7 ounces

Dissolve altogether, and filter.

Now make the following solution:—

Formic acid	1½ ounce
Nitric ether	3 drachms
Acetic acid	2½ ounces
Acetic ether	2½ drachms
Epsom salts	4 grains

Mix this solution well, and add to the former. It should be made up but a few hours before using.

In order to be successful in this branch of photography a person must exercise a great deal of patience, and must have good judgment as to the proper kind of weather. The instruments must be a matter of paramount consideration. Pure chemicals are absolutely necessary; they should also be fresh. The instrument with which I made this picture, was an 11 by 14 wide-angle view lens—short focus—a cone box of the same size. These lenses are quick-acting, and are well adapted to this business.

During the year 1871 I was unexpectedly called to my home in Virginia by the sickness of a sister. I remained until she was convalescent, when, taking the back track, I stopped over a small town where I had some acquaintances, with whom I intended remaining a few days. Strolling through the town the day following my arrival, my attention was attracted by a sign which read, "Photograph Gallery." I at once went upstairs to see "our brother." The proprietor, principal and sole operator, was a young man seemingly some sixteen years of age. After introducing myself, I inquired how business prospered. He said, "Business would be good enough if I could only get in running order." I inquired into the nature of his trouble, and soon learned that his chemicals were all out of order—in the true sense of the word, in a "fog." I glanced at his work which he had been trying to do, which

was poor enough. I expressed a willingness to assist him, which caused him so much joy that, for the moment, I thought he would embrace me. The first thing I did was to make an exposure. When the negative was brought to the light, I beheld a mixture of streaks, blotches, and zig-zag lines, similar to the ripples on a lake. There were, besides, little oblong, densely opaque patches strewn about over the plate. But the most curious part to him was, that just as soon as the water was turned on after fixing, the image entirely disappeared. There were also indications of fog. "Now," I remarked, "I will explain all of this to you, and give a remedy for each of these blemishes. We will then try my remedy, and see if I am not correct. Pay good attention, for then, should you ever get into this scrape again, you can easily rectify it."

"These little zig-zag lines, which you see run in the direction the plate was dipped in the bath, were caused by immersing the plate before the collodion was properly set. These little opaque patches were caused by the undissolved ingredients in your collodion—poor alcohol and worse cotton. These streaks are caused by your bath being neutral, or alkaline, too much so for your collodion, which also caused the fog."

"But what makes it wash off in that way?" he asked.

"That is very easily explained," I continued. "Get your hydrometer, and test the strength of your bath. Well, now, how strong is it?"

"It is just seventeen grains strong," he replied.

"How did you make your collodion?" I inquired. He produced his formula, which is a very good one for all kinds of work, and I will here give it, for it will never fail to work:—

Aleohol	...	...	...	15	ounees
Ether	...	...	...	15	"
Iodide ammonium	...	...	...	80	grains
Bromide potassium	...	...	...	50	"
Bromide ammonium	...	...	...	25	"
Iodide cadmium	...	...	...	80	"
Bromide cadmium	...	...	...	50	"
Cotton	...	...	...	150	"

I then inquired how he dissolved his potassium.

"In a little water," he said.

"You have used too much water where you should not have used any. Not being used to making collodion, I would advise you in the future not to make your own collodion, but buy it from some good stock dealer, and then you will know it is good. Now we will evaporate your bath to dryness, fuse it, make some new collodion, and you will be all right. If your bath had been strong enough, the film would not be so rotten. Hence, that is one reason why it disappears from the plate during the process of washing."

With that we went to work, and made some new collodion by the above recipe. After doing this, I called for his evaporating dish.

"My what?" said he.

"Your evaporating dish," I repeated. "Your round porcelain dish which you boil your bath in."

"I don't know what it is, sir; never saw one in my life."

I was fairly surprised at this. "Don't you read the journals?"

"No, sir; I have never read but one, which I found among the things when I bought them."

I told him I would send him some when I got home.

The best thing I could do, under the circumstances, was to procure an iron pot lined with porcelain, which, I think, in many respects, is equal to the genuine article until it becomes fire eaten, when it makes a good lye pot for glass.

After getting his dark room in good working order, I

next looked into his printing room. He said he had a great deal of trouble with his paper.

"It has specks all over it. What is the cause of it?"

I looked at his paper after being silvered, and found there were little pink specks all over the surface, and that it presented a mottled appearance.

"This," I said, "is caused by a weak bath and under fuming. Always keep your bath forty grains strong, and slightly neutral. In warm weather, silver one minute and a-half; in cold weather, silver two and a-half minutes; fume from fifteen to twenty minutes. If your bath is forty grains strong, and your paper presents this mottled appearance, you have not fumed long enough. So now you are in good trim, and I will bid you good day."

That same man is to-day one of our most successful photographers.

It is the duty of all employes to seek the advancements of their employer's business, for in so doing they but advance their own. An employer will readily discover and reward all tendency on the part of workmen to endeavour to do their best. Keep the gallery neat and clean, dust off the frames, be polite and attentive to all customers, do not be slovenly in your own personal appearance; in fact, do everything with a faithfulness as if you intended to remain there the balance of your days. I have frequently beheld a tendency on the part of employes to slight their work, not caring what became of their employer's reputation, thinking if they were discharged they could easily procure other situations. Now this is wrong and unjust, for you had as well put your hand in his pocket and take his money as neglect his interest.

I admit that some employers are task-masters, and unjust toward their workmen, expecting more from "a hand" than he can accomplish in an artistic manner. I worked for one of this species of the human race at one time. There were three of us. I will relate a little circumstance that happened while in his employment. It may serve to show up one of the "tricks" sometimes practised in our art.

We had to make a picture of a corpse, at the residence—a little child. After making the negative we brought it back and gave it to our employer. It was in summer. The window being raised, he stood it against the easing to dry. We went on with our work, when all at once we heard a crash. Up came the "boss" in a purple rage.

"Twenty-five dollars lost through the carelessness of workmen! There is no dependence to be placed in them," he said, when he had placed it there himself. "Now," said he, "if you men don't patch that negative up and make a good print from it, I will make you all pay for it."

"We did not like this, for he was behind with us in salary, so had the advantage. I gathered up the fragments with a sorrowful heart, and with a countenance ten dollars less pleasant than a few moments previous, when, to my joy, I beheld one piece of the glass, bearing the head, face, and neck, sound as a dollar. Our way was easy now. We proceeded as follows:—Selecting an old negative from among the corpse negatives we then had on hand, as near the same size of the broken subject as possible, we then took a sharp, keen knife, and removed the face of the subject, so that the broken film would fit it nicely. After removing or scraping off the head, we removed the film from the broken negative by soaking in water, with the assistance of gelatine. After trimming and re-trimming, we at last secured a very nice fit. We then varnished the new negative, opaqued the background to hide all blemishes, and then printed; after printing, we grayed the ground. All children, when in death, have their hands folded over the breast, hence we had no trouble in this respect.

The Photographic News.

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OLD AND MODERN MODES OF TONING.

To those who are familiar with the history of photographic printing and the changes which have taken place in the practice of silver printing, it will seem somewhat strange to enter, at this day, into any discussion or estimate of the relative value of gold toning pure and simple as at present practised, and that of the old hypo toning bath. We receive continual evidence, however, that some renewal of the subject is not entirely unnecessary. Not unfrequently, we find old photographers referring to the old system with regret that it has been entirely abandoned. And, occasionally, we find young photographers who only know of the old method by tradition, anxious to know why it was abandoned. We have before us a letter, which, if we were disposed to deal with the subject in a "chaffing" spirit, we might mention as dated "Hauwell" (!), in which the writer states that he has been informed by a friend—an old photographer—that a bath of hypo and gold, containing fifteen grains of chloride of gold in two quarts of saturated solution of hyposulphite, toned more rapidly, saved every grain of silver, and gave as good results as the present method. He naturally presumes that there must have been some good reason for the abandonment of such a process. The conclusion is a very legitimate one; and as we frequently meet with similar queries which cannot be fully answered in the column devoted to answering correspondents, we may briefly restate the case here.

Prints placed in the "old hypo" bath, in which the processes of toning and fixing went on together, inevitably underwent a process of sulphur toning. If an unwashed print be placed in a solution of hyposulphite, the free nitrate of silver present inevitably decomposes a portion of the hyposulphite, liberating sulphur and producing sulphur toning; and sulphur toning, as experience quickly taught, was unstable, producing fading prints. To avoid this the plan of gold toning was devised. The print was to be toned by a deposit of pure gold, and then subsequently fixed in a solution of neutral hyposulphite, and properly washed. Theoretically speaking, if this process were carried out with precision the prints should be permanent. The sad fact that they are not always permanent is probably due to many causes, the chief of which is doubtless to be found in the fact that the processes are not always carried out with proper care. But it is something, surely, to have a process which should theoretically give permanence in place of a method which was exceedingly uncertain, but certainly untrustworthy.

The old hypo bath was a strange mixture, and constantly changing in its character. Decomposition was initiated at the outset, and fresh decompositions were constantly going on ward; and the older it was and the more full of uncertain abominations, the more rapidly it toned, and the more

valuable it was considered. It was a great step in the direction of theoretical propriety when the use of the separate gold-toning bath was adopted. And if it has not resulted in greater certainty of permanency, it has been due to the causes in operation not entirely under the photographer's control. At best, silver is not a very stable substance, as every silversmith's assistant knows when he cleans from time to time his master's tarnished stock. And hyposulphite is a treacherously unstable substance, decompositions often being set up in the fixing bath, unknown to the photographer, which finally issue in changes in the print. Fortunately, more stable processes are now in existence, and are daily acquiring a more practical character, and promising to supersede prints which, under the best conditions, are of doubtful permanency, by rendering the production of permanent prints easy and certain.

COLOURED MINIATURES ON GLASS.

ENGLISH photographers have been familiar for many years with methods of colouring photographs at the back, and then rendering the paper transparent, so that the colours being seen through the print give the effect of a skilfully coloured picture to work very roughly done. In some of these processes the print is mounted on before colouring, and, when completed, the effect is obtained of a miniature on glass, plain or convex. A method which has recently been patented in America appears to be very perfect in its details. Some of our American friends believe that the method has been published previously in this country, and that hence the American patent is invalid. We now publish the American specification. If any of our readers are familiar with such a process in all its precise details we shall be glad to know where it was published. In any case, the detailed precision of the American specification will be interesting and useful to many of our readers, as it is not patented in this country. The patentee is Mr. B. T. Irish. He says:—

"My invention relates to the production of coloured pictures by mounting a photograph on glass, removing the paper, so as to render the print transparent, and then colouring the picture on the back. This method has been practised for many years with more or less success; but as heretofore practised it has been difficult and uncertain, and the results obtained have not been considered artistic.

"My invention consists in certain improvements on the method referred to, which result in the obtaining of effects superior to those obtained by any other system known to me.

"I shall first describe my process or method in detail, and will then point out those features which distinguish it from others.

"The photograph, if mounted, is first removed from its card by soaking for a time in water, and then peeling the card away from the photographic paper. The unmounted photograph is now attached by its face to a glass by means of a paste made of—

Water	...	...	...	...	10 parts
Starch	...	...	...	...	4 "
Nitrate of strontium	...	...	...	...	1 part

stirred, dissolved, and boiled until the mixture has cooked well.

"Other pastes or materials, however, may be used to attach the photograph to the glass, if desired. The paste above described is one good material for the purpose.

"After the photograph is affixed to the glass, as stated, it is left until all moisture has dried out of it, and the paper is then made transparent as follows:—The paper is ground down until it looks quite dark and very thin, or, possibly, until the surface film next to the glass begins to be very slightly scratched. The grinding is effected by emery-cloth, or fine sand-paper, or the like, with which the back of the photograph is rubbed briskly until the paper is nearly ground off from the glass. When it is thus ground suf-

ficiently and evenly, it is placed in a bath of melted paraffin, for which other substances, such as bees-wax or spermaceti, may be substituted. It is there left for a few moments, and is then removed, and all surplus wax is rubbed with a cloth from the back of the picture. It cools immediately, and is then clear and transparent, and ready for colouring or painting.

"This method of rendering photographic paper transparent, and preparing it for colouring or painting, is a decided improvement over any system heretofore devised. The improvement is due to the conjoined operations of grinding and treating the paper with paraffin-wax or its equivalent.

"I am aware, as above said, that it is not new with me to remove the greater portion of the body of the mounted paper; but I am not aware that this has ever been before effected by grinding down the dry paper. Nor am I aware that the grinding operation, or, indeed, any method of removing the paper, has ever been used in conjunction with the wax treatment. I exclude from the category of wax the balsams, oils, and varnishes which have been used for the purpose of giving the picture transparency. These materials are not to be relied on, are difficult to use, and are objectionable in other material respects, since they are certain to ruin photographic prints by causing them to turn yellow, to spot, or to crack from the glass.

"My process gives to the photograph the appearance of a transparency upon ground glass, of a dull or softened appearance, and of such density as will admit of colours showing through the picture with a softness, and yet brilliancy, not attained by any other method of which I have knowledge.

"In addition to the beauty of the effect, further advantages are derived, in that there is freedom from liability to spot, or to become injured by dust, moisture, handling, &c., and durability of the transparency and picture is obtained.

"After the photographic print has been rendered transparent, as described, it is then painted with oil-colours; or such parts as may be desired are touched up direct upon the back of the picture itself. Then another glass is placed at the back of the picture, and oil-colours are put upon the back of this second glass, and the various tints are placed opposite such parts of the picture as may be desired. Thus the colours are separated from the picture by the thickness of a glass, and this separation of the colour has certain advantages over painting direct upon the back of the picture, as greater softness can be obtained in this way; consequently, it is really a system of double painting. When the painting is completed, the glasses are backed with a piece of card-board, and the whole is then bound together with strips of gummed paper, and the picture is finished.

"Having described my invention, what I claim, and desire to secure by Letters Patent, is—

"The process of preparing and producing coloured photographs on glass, by first mounting the photograph on glass, face downward, then grinding it thin from the back, and then treating it with paraffin or its equivalent, as specified, or the after reception of oil-colours, applied directly to the back of the picture, or to a second glass, to be applied as a backing, substantially, as herein described."

FRENCH CORRESPONDENCE.

PHOTO-ENGRAVING PROCESS IN PRACTICE—FUTURE USEFULNESS OF PHOTOGRAPHIC SOCIETIES.

IN the PHOTOGRAPHIC NEWS of the 13th June, among other interesting subjects, there are two articles on which I should like to say a word or two. The first of these is entitled "Photo-Engraving Processes in Practice;" the second, "On the Future Usefulness of Photographic Societies."

Photo-Engraving Processes in Practice.—I have thought it advisable to transfer to the columns of the *Moniteur*

de la Photographie the article on phototype printing, with the addition of some rather copious comments of my own. My reason for doing so is, that this question, as it appears to me, is one of the most important of those which are met with among the many applications of photography. I may be allowed to give here a condensed account of the ideas suggested to me by the author of this able and truthful article. What he says as to the impossibility of converting by some known photographic process any kind of original drawing into a printing block—that is to say, into a plate with prominences and depressions, of which the raised portions will give an impression—is absolutely true, and will remain so until some method is discovered of printing simultaneously with the type a photographic image in which the gradation of the shading and the fineness of detail are equal to those of an ordinary photograph in silver salts, or one produced by the process designated phototypie (collotype). As I have made use of this word, I may draw attention to the fact that it is the designation of one of the processes by means of which, according to the author of this interesting article, photo-typographic printing may eventually be rendered successful. "By surface printing," he says, "as in collotype, a block may be secured; but this is not to be worked in a printing press." The whole of my personal experience on the subject of the process of phototypie, as I have published it, is thus entirely corroborated. Phototypie, as is truly said, might be used for taking photo-typographic impressions of this process, or rather of the plates produced by this process, which could be printed in the ordinary printing press. Most certainly, in the present state of the collotype process, there would be plenty of difficulties to overcome before that could be the case. We cannot imagine it to be possible, working the process as it is everywhere worked, to insert in the text plates with margins projecting all round beyond the picture, while for a typographic print it is essential that all the blocks should have the dimensions of the image itself, otherwise their insertion in the text is perfectly impracticable. To cut the plates, bearing the printing surface on a film of gelatine, to the required dimensions must not be thought of: this course is neither possible nor otherwise practicable, and is, besides, anything but economical. But I have pointed out a method, as I think, of turning the position, so that the production of photo-typographic blocks will become feasible. From the present time, as my preliminary experiments go to prove, the problem of photo-typography may be considered solved; it is now only a question of putting it into practice—not that I mean to say that the latter is an easy question at all. In the comments on my translation of the above-mentioned article, I have asserted my absolute conviction that the collotype process is the only one—at least, in the present state of our knowledge—by the aid of which we can arrive at the solution of this important problem. With metal plates we can only succeed when the lines or grain forming the shading or modelling are very close together, and the result is an unpleasant and unclean aspect, which is anything but artistic. A grain in line, however fine it may be, cuts up the subject and separates it into confused parts; for instance, the eyes, the nose, the mouth, of a portrait are nothing more than a patch-work formed by a sort of weaving of lines or granulations which form a distance, renders the whole effect agreeably; but viewed closely appears as a cross-hatching, sometimes anything but satisfactory. It will be noticed that it is only possible to print from plates like these in the printing press when the granulation or lines are sufficiently wide apart, otherwise the white spaces will be smudged, and the impression will be entirely spoiled. If we examine any wood engraving we shall see that, however subdivided it may be, however much it may be hatched, wherever necessary, it gives a finite outline, the gradations of shading are rendered by a more or less close grain; but the eyes, the mouth, the nose, instead of being cut by white spaces, are

formed by clean-cut and continuous lines. The air is also clearly outlined, an effect which an intelligent hand is able to interpret, but which a mechanical and unintelligent process can never produce. I have seen some printing blocks made by M. Petit, who is the photographic operator of the house of Firmin-Didot. He rules, by means of a machine, a regular grained pattern in line over a negative plate, and by crossing the cuts of this pattern he obtains a print, which a certain amount of retouching by hand on the zinc succeeds in making passable, but which, in my opinion, is far from realising the object that we are in search of. What we want is a block to be inserted in the text, and capable of being printed from simultaneously with the type; the block, without any cutting whatever, must have on it a picture similar in every respect to an ordinary photographic print. Now this, I repeat, we are only likely to obtain by the process of phototypie; in this process alone shall we find the solution of a problem which is destined to exercise so important an influence on the future of the applications of photography. I refer the readers of the PHOTOGRAPHIC NEWS to my article published in the *Moniteur de la Photographie* of the 1st of June last, under the title of "New Process of Phototypie," where they will learn what I have been able to accomplish in this direction, and will obtain some idea of a new improvement in this method of photo-typographic printing.

On the Future Usefulness of Photographic Societies.—I have been much struck by the paper on this subject read by Mr. Arthur Brittlebank before the South London Photographic Society. The position which, as he maintains, photographic societies ought to occupy is a very high one, and the idea of a technical institute for photography controlled and directed by such societies—an idea which he elucidates very happily—is worthy of great praise. He gives a number of reasons for holding that the time is now come for photography to be regarded as a science, for providing it with means of instruction, so that those who embrace it as a profession should have a sufficient knowledge of chemistry, optics, and the rules of art generally. Such an institution appears to be wanting in England, and we in France are no more richly endowed in this respect. My own opinion is that it would be exceedingly difficult to create in this country a special school for training capable and skilled operators; but what I think would be easier would be to organize in the larger photographic establishments a general system of instruction in all the branches of science and art bearing on a sound and intelligent practice of photography. But however that may be, we all here agree fully with Mr. Brittlebank's views, and we should be glad to see them carried out in England, because it would be for us an excellent example, and also a great incentive to establish in France a special institution of the kind indicated. For the present we are fain to be content with courses of lectures on photography. Such a course I have myself professed at one of our art schools, and I shall probably renew it; M. Davanne, again, has made an essay of the same sort at the Sorbonne. These are only the thin end of the wedge, for instruction so limited as this must be quite insufficient to meet the wants of a profession which numbers so many members. There are in Paris more than 2,000 photographers; if we add another 2,000 for the provinces, we shall have a total of 4,000 persons engaged either as principals or assistants in the practice of photography; and all these, as well as the art itself, could not fail to reap great advantages from a proper system of technical instruction. In England the number of persons who have taken up photography as a profession is still larger, and the need of obtaining for them systematic training in chemistry, optics, and art is in proportion greater. My own humble need of approval is not of a kind to give any additional value to Mr. Brittlebank's admirable proposals, but it is as well that he should understand, and that all your readers should know, that ideas of the same kind find an echo on this side of the

Channel, and that we are unanimously anxious that his wishes may be realized, and so soon as possible. In the absolute dearth of any photographic news in our own midst, I have thought it better to collect the materials for my correspondence on this occasion from an English source. It seems to me only natural for us occasionally to interchange ideas with our *confreres* in your country, and they will also, no doubt, be glad to hear what is thought in France of their work and of their views, for, humble as my position is, I am not the less a part of the whole which is called France.

LEON VIDAL.

ART AND PHOTOGRAPHY.

BY AN ART STUDENT.

WHEN we can fully comprehend the meaning of the word "art," there will be then, and not till then, some faint hopes of mastering the difficulties which are entailed in the production of a picture, either figure or landscape. Before anything can be done, we must first know what it is we are going to do. Now the production of a picture includes, if it is an art-production, the knowledge of so many accomplishments (not necessarily rules), that, to surmount them (a feat which but few men accomplish) takes many years of toil—years of a man's life during which his income is but small, for no true artist with a love for his profession (and he who has no love for it is no artist at all) will turn out work which contains one spot which may offend his eye.

Photographers are saved the necessity of acquiring the rules and practice of drawing and modelling, and here it is that the first cause of their failure is to be found—the fact that they are unacquainted with the forms they wish to portray; for it is only by a close and persistent study of the antique and living model that the artist is enabled to detect the faults and beauties of his own sitter, so as to sink the blemishes by means of light and pose, and bring forth the beauties in all their due importance. Photographers wish to vie with artists, and claim for their work the title of "fine art"; if so, they must follow the beaten track that those who aspire to art have to follow, and win by patient industry in the life schools the power of discerning what is grand, and casting aside as useless that which is petty. The man who bears the proud title of Royal Academician after his name is one (or ought to be one) who concentrates upon a canvas the knowledge of a lifetime, not gleaned by himself alone, but by a study of the works of those who have gone before, coupled with the brain which the Almighty has bestowed upon him, and produces a picture which deserves the name of an art-production in the full sense of the word.

It will easily be seen, then, that the power of producing a grand picture is only to be acquired by years of properly directed study. This point being granted, it is not difficult to understand the reason why so few photographers rise above the mediocre; and it will be so in all time coming, unless they are inclined to devote more time to that portion or branch of the profession which has for its end the making of a work of art. It is to the rising generation that we must look to ennoble photography. The love of gain must be sunk entirely, and the love of the beautiful nursed in their hearts, until they are ripe and ready to enter the field of art, and blossom forth their beauties for our joy and delight.

Having shown, or tried to show, the difficulties—or rather, the work—which lies in the path of an aspirant to fame, we will proceed to consider the meaning of the word *Art*, in so far as it is applied when considering the merits of a picture, and the way in which it is put together; for, according to the powers of the composer, so will the picture be more or less artistic; and if composed in the manner of the general run of photographs to be seen at present, will be reduced to the level of a horror, a blight to the eye, and a mockery to all which is true in nature.

BLISTERING IN ALBUMENIZED PAPERS.

WE have often expressed the conviction that blisters were chiefly due to imperfect coagulation of the albumen; the film in immediate contact with the paper, remaining soluble, becomes detached in the hypo fixing bath, whilst the coagulated outer film rises in blisters, and leaves the paper. In the following remarks by the Editor of *Anthony's Bulletin* this view is confirmed. He says:—

"From all quarters we hear complaints of the working of albumenized papers. These complaints are of two kinds—one as to blisters, the other as to mottling or the appearance of imperfect silvering. These complaints are prevalent in Germany, and are the subject of comment and suggestion by Dr. Vogel in his correspondence; they reappear in the English journals, and in this country are rife.

"Some months ago the Dresden Company sent instructions for the prevention of blistering. As this consisted in soaking the prints after being toned in a weak solution of muriatic acid, parties were undoubtedly a little skittish about using such a method, and incurring the risk of placing the paper while acid in a solution of hyposulphite. The evident purpose of this use of muriatic acid is to thoroughly coagulate the albumen, and thus prevent its becoming softened and soluble to a certain extent (as it undoubtedly does) in the ordinary hyposulphite fixing bath. We use the words, 'as it undoubtedly does,' advisedly, on the strength of experiments often repeated, which to us are conclusive. It has for years been our opinion that the albumen spread upon the paper was not thoroughly coagulated by the silver bath. In the case of single albumenized papers the lack of body and lustre produced by long washing was a certain evidence of waste of albumen. In the case of heavily-albumenized papers, the almost constant occurrence of blisters indicates a lack of cohesion between the paper and albumen, which could readily be accounted for on the same supposition. For the purpose of testing the theory we made the following experiments. A solution of muriatic acid of the strength of 1 ounce to 100 of water was placed in a dish, and a sheet of albumenized paper was floated back down until it assumed a liquid glistening appearance; it was then removed and dried. After being printed, toned, and fixed in the ordinary manner, not a trace of blistering appeared, while, as a strong additional advantage, the pictures are more brilliant, print quick and vigorously, and tone with the greatest ease; and the fact that there had been no waste of material was apparent by the greater solidity and stiffness of the print when dry. The fact that a certain portion of the albumen was only partially coagulated by the action of nitrate of silver upon one surface of the sheet only was definitely ascertained by the following test. A print made in the usual way, upon being removed from the fixing, was rinsed in a small quantity of water, and this water was allowed to stand undisturbed for a day or two. Upon examination, in all cases, a considerable slimy deposit was found at the bottom of the vessel. That this deposit did not proceed from the sizing of the paper is evident from the subsequent experiment. A piece of the same paper was taken and treated in an exactly similar manner, with the exception that it was floated back down upon the solution of muriatic acid. The water in which this print was rinsed, upon standing the same length of time, was found to be perfectly free from a deposit, and there was no blistering of the surface. The necessary conclusion, then, is, that when paper is merely silvered on one side, a portion of the albumen is left in a condition which admits of its being dissolved in a hyposulphite solution of the strength of the ordinary fixing bath, and which, when said solution is diluted, is deposited at the bottom of the vessel. As in such cases there is no apparent change of the surface of the print, it is reasonable to suppose that this substance must be supplied from the

portion of albumen next the paper, thus necessarily destroying perfect contact of the coagulated portion of the coating with the surface of the paper—a condition eminently favourable for the action of the causes producing blisters. What these exact causes are is worthy of future inquiry.

"Having pointed out one mode of preventing blisters, it is hardly necessary to state that any other solution which will coagulate albumen applied in a similar way will produce the same effect. We have tried floating the paper back down on a weak solution of nitrate of silver with the same effect, but care should be taken not to use a solution which would be likely to injuriously affect the toning bath."

WHY DO SO FEW PHOTOGRAPHERS ACCUMULATE WEALTH?

BY N. H. BUSEY.*

THIS has been a matter of surprise to many, particularly when we take into consideration the facts, that the profits in photography are good, and, until the last few years of depression, the amount of business done by photographers of any prominence has been quite large—in fact, there seem to be very few occupations or professions in which, for the same amount of capital invested, as good returns can be realized—and yet, upon looking over the long list of photographers in the United States, we find very few who can be said to be wealthy. While there are, no doubt, in special cases, reasons that are peculiar to those cases, yet in the large majority of instances the influence of certain causes can be so distinctly traced as to justify the application of the term *general laws* to those causes.

The term business, as applied to commercial pursuits in general, is hardly applicable to photography, as photography is really more of a profession than a business; the photographer selling his skill, taste, and knowledge, simply using the materials of which a picture is composed to make his ideas tangible. The merchant buying articles having a market value, and selling them for more than he pays for them, reaps an amount of profit corresponding to the quantity of goods sold; consequently, the more money he invests in the purchase of goods, the greater income he will realize; thus, while he may commence business in a very modest way, yet by the constant application of a portion of the profits of each year, to the capital employed in his business, he in time finds himself in possession of an extensive business and large means.

Unfortunately, this is not the case in photography; any amount of money added to the capital in business beyond what is required to fit up the establishment with the necessary facilities for the production of first-class work, and in a style to meet the requirements of the patrons, is absolutely lost. This condition of things necessitates the seeking of channels of investment outside of the photographic business; and as money judiciously used in legitimate business produces larger returns than can possibly be realized from any other investment, the photographer is cut off from one of the safest and surest roads to wealth. It is a well-known fact, that the safest investments pay the smallest dividends, and in proportion as the gains promised are large, the risk is great.

The natural desire to become rapidly rich prompts many persons to embark in enterprises promising large returns, but which, in most instances, not only do not meet the expectations of the stock-holders, but result in the total loss of the money risked.

A want of judgment in the expenditure of money on the gallery, and of economy in the conducting of the business, are rocks upon which many photographers split.

It has been pretty well proven that large and expensive galleries do not pay the interest on the capital invested

the expense of running an extensive concern amounting to more than a business limited as photography is can bear. Those habits of economy and close watchfulness of expense that are so thoroughly inculcated in a mercantile life, are totally wanting in the education of a photographer.

It is not the magnificence of a studio that gives reputation and patronage to the artist, but the quality of his work. It is a positive throwing away of money, to expend more upon the fitting up of a gallery than is required to furnish it with neatness and good taste, providing the show-room with what is required to show the work of the establishment to the best advantage, and supplying all the necessary facilities for making good work, to the several departments.

Competition being strong, there exists a feverish anxiety in the breast of each photographer to excel his neighbour—a desire to buy this new instrument, that process, to make alterations in his light or in his gallery, or to do something that will draw trade from the place of his opposition to his own.

Photography is advancing with such rapid strides as to cause its votaries to be continually on the lookout to avoid being left behind; this is the reason that photographers are so easily duped by process mongers, &c.

The photographic business is more or less fluctuating, either on account of the deterioration of the work of a gallery, or the natural desire of mankind for a change; it is, therefore, necessary for the photographer to keep his business and private expenses well within his income, in order to be ready to meet a temporary falling off in trade.

A frequent cause of inconvenience and loss to photographers is the unwillingness of owners of property to make the necessary alterations to fit their buildings for use as galleries, not only causing the photographer to withdraw a portion of the capital that he needs to conduct his business, but demanding a higher rent than could possibly be obtained were the premises used for any other business.

It has been remarked that one of the great causes of extravagance among Americans is the cultivation of tastes that are beyond the means of the possessor to gratify. This is eminently so with photographers. The cultivating influence of their profession, and their contact with patrons possessed of wealth and taste, naturally inspires them with the desire to surround themselves with those comforts and luxuries so essential to the happiness of refined and æsthetic natures, not to speak of that ignoble anxiety to excel in show and fashionable style; commanding for the time being incomes sufficient to gratify those desires, and forgetting that there is no guarantee of the continuance of present prosperity, they acquire habits of extravagance and lavishness in their personal expenses, and while they may not spend more than their incomes, yet they accumulate nothing.

A farm seems to be a species of investment that has peculiar attractions for the photographer. Although it is easy to understand how the business man, wearied by the rush and turmoil of a city, should look longingly at the quiet of a country life, and the independence of agricultural pursuits, yet how very seldom has such an investment proven profitable; rather the reverse, as, after spending money, year after year, on improvements, fertilizers, &c., the property sells for less than its first cost. For a city man to own a farm, simply means that he has established a sinking fund, in which to deposit his surplus means, without any return.

After summing up the various causes mentioned in this article, the most important, and the one that probably exceeds all of the others in its effects, is personal extravagance; the spending of the yearly profits as if they were only the income from capital invested, instead of being really portions of that capital; living in fine houses in

fashionable localities, driving fast horses, travelling, and all of those habits that can only be indulged in by the rich. And yet it is gratifying to know that photography is steadily growing to be a regular business, requiring capital, skill, and business knowledge.

Photographers are now rated in Commercial Registers, and are looked upon in the same light as men of other professions and occupations. The amount of capital invested in photography is larger than ever before, and the amount of business increasing from year to year, giving good grounds for the hope that ere many years have passed, the number of wealthy photographers will be considerably increased.

EARNEST WORKERS.

BY L. W. SEAVEY.*

PHOTOGRAPHY has need of more earnest, careful, intelligent, and conscientious workers. There are among its shining lights, working in its varied departments, men whose whole lives are given over to it; to its advancement not only scientifically and artistically, but to help the noble endeavor of placing among the high and honorable callings of this world. Men there are who are working for the pleasure which they derive in the gratification of their tastes and their noble ambitions. Occasionally comes the pang of disappointment at failure, or at non-appreciated artistic results. The close relations between the photographer and his sitters almost daily tax his patience, causing him, perhaps for a moment, to regret being engaged in the profession and practice of photography; but as he recovers his equanimity, he takes fresh courage to try for the higher walks which he knows are still above him.

How discouraging must it be to the earnest workers who produce their results at an incessant expenditure of vital force, and frequently of no inconsiderable sums of money, to find themselves surrounded sometimes on all sides by hordes of wayside robbers, who lay in wait to filch from them their thoughts and visible substance.

By many, how slightly are regarded the sacred rights of property! A new camera-box of superior workmanship is exhibited, and not only at home, but abroad, it cheapened by carelessly made imitations. A new style of velvet frame is designed, time and money expended, and the imitator lies ready with cheap materials to cheapen a good article.

Cheap camera-tubes, like bogus pianos, bear false inscription. Photographs by earnest, able men are remounted and exhibited as "specimens of our work," or "this style 82.00 per dozen." A leading man of taste procures a background or accessory, and his neighbour immediately gets a poor imitation, and makes and gives publicity to pictures of notorious or disreputable characters to damn the work of the former. No sooner does B. introduce to his customers a new card mount of his own design, than C and D. follow suit, blaming themselves if they do not immediately appropriate B's ideas. And on and on it runs.

And where does all this filching and following lead us to? Are not the upper men crowded upward, and do not the hangers-on drop off slowly, one by one? Are there not fewer persons in the photographic profession now than fifteen years ago? Are there not more galleries of the first class in our cities than formerly, and is not the gap wider between the high and low ones? Is not eternal vigilance the price of the photographer's liberty, artistic and financial? Are not many of our stockdealers making a mistake in continually crying about the ignorance of the photographer; that he does not know a good or artistic thing from the reverse; that price alone is the important item? And is not the photographer who delights in palming off badly lighted, printed, and mounted work, gradually seeing that the public are no longer the stupid dunces he has been considering them?

Will not one frame of striking, new, artistic photographs placed on exhibition in a town of fifteen or twenty thousand so influence or educate the people that they will want the same or similar? And this naturally leads to the question of a teacher. We have, in America, a few leaders in photography who set the fashion for the whole country. They happen to be men mostly who have met with financial success—some with expensive tastes, a part and parcel of, and necessary to, their artistic life. These men excel in their specialties, and in scarcely one do we find the merits of several combined. Still we have no great and willing teacher. Relying on our photographic publications, should we not have something more concise and definite than anything yet published? Who will write and illustrate a book which will not only explain why a figure should be lighted and posed in a given position, but illustrate it with pen, pencil, and photograph, making the right and wrong both palpable by forcible illustration—a book that will guide a man in the narrow paths of good taste, and by the most direct route? Who, I repeat, will write that book, and what will be his reward? Will the first man or men of the country do it? I fear not. Earnest workers with the brush and camera are seldom given to writing books.

Our earnest workers, American and foreign, are a legion slowly but surely increasing in numbers; to their united energy we trust for the elevation of photography to its place in the scientific and art world.

Correspondence.

PHOTOGRAPHIC SOCIETIES.

SIR,—It has struck me, after reading Mr. Brittlebank's paper, that if every one contributed his views on the matter of photographic societies, their management, &c., when fairly sifted the residue might be made use of to alter and materially improve the existing societies. I am an old member of many societies, and the objections I find to the photographic societies are just these.

The annual subscription gives the members nothing except the presentation print and the option of hearing papers read. This, sir, in my opinion, is the first wrong. The presentation print is not valuable to many; those who can afford to have it framed have plenty of other pictures to fill up the space on their walls, and, in fact, are, to a certain extent, satiated with photography. The others only live in apartments, and are often moving to other situations and in these cases they only become an inconvenience.

Next the papers. They, as a rule, contain nothing interesting, except in very exceptional cases—being generally the product of persons who try to make their names prominent, or stimulate some discussion to enlighten themselves, especially on matters they don't quite understand; in fact, try to suck the brain of the preserving photographer for their own benefit. No men of any particular standing ever come to the society and say what they find out, by which they make their pictures and their fortunes by business.

Photographic societies are not like geographical societies, astronomical societies, engineering societies, surgical societies, &c.: these are appreciated by the general world; whereas photography, say what you will, is largely mechanical. I admit it requires much artistic taste also, but is very mechanical, after all.

Another great drawback is that about ten people do all the business; they are always holding all the offices, and always reading all the papers, except now and then. One more daring member than the rest manages to sew his way in to get his name in print; he then, perhaps, reads papers on—what? Nothing—childish rubbish, known to every little printer's boy. The old hands laugh at it, and think what fools a set of men must be who

pay a yearly subscription to have the right, and also take the trouble, to attend to hear such twaddle. Now and then something good is given by some persevering amateur who has both time and money at command. But this is very seldom, and it's ten chances to one, when he ventures to do this kindness, the set of know-nothings pounce on him like a flock of vultures, and insist that he is quite wrong; so much so, that I often wonder the person don't begin to think he's in the wrong skin, and that he's really some one else. This cavilling by theoretical drones who neither have the perseverance or ability to work the thing out, but insist everything's wrong because their skulls are so thick they don't exactly see it, deters many from bringing anything new before a society.

One society, the parent one, is quite sufficient, and these offshoot societies in London are a failure. The only way I see of making them lasting is to make the meetings conversational, so that any one can say what he thinks, and does not have to mount a rostrum and hold forth—a thing, perhaps, he has never attempted before in his life, and at the bare thought of which he quails and feels he'd rather not.

Let the subscriptions go towards paying for a yearly picnic; or supply each member with a good book on chemistry, optics, drawing, painting, or any work calculated to amuse and instruct, and which might usefully aid him in his business.

My views may be entirely at variance with others, but still if we all contribute, something like good may be taken from all, and acted upon for the benefit of the photographic profession at large.—I am, sir, yours respectfully,

JAMES SYRUS TULLEY.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

SIR,—As notices of certain meetings headed "South London Photographic Society" have appeared in the photographic papers, I am requested by the Committee to state that all indoor meetings of the said Society cease from June 5th till October 2nd.—Yours, &c.,

H. GARRETT COCKING, Hon. Sec.

High Street, Lee, S.E., June 30th.

TRADE MARKS IN THE COLONIES.

SIR,—It may not be generally known that under recent Acts the registration of Trade Marks may now be effected in our Australian Colonies, New Zealand, Tasmania, the Cape, &c.

In view of the forthcoming Sydney Exhibition, many firms are taking advantage of the Acts referred to, and should any of your readers desire to do so, I shall be happy to afford them every information on the subject.

I may mention that several cases have recently occurred of well-known British brands and labels being largely forged in the Colonies.—I am, sir, your obedient servant,

F. DES VŒUX.

Office for the Protection of Trade Marks, 32, Southampton Buildings, Chancery Lane, W.C.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting of this Association was held on Thursday evening, the 26th ultimo, in the Lecture Room of the Free Library,—Mr. J. H. T. ELLERBECK, Vice-President, in the chair.

The minutes of the preceding meeting were read and confirmed.

The presentation print for 1878 was approved of, being a fine Autotype enlargement, 24 by 18, from a negative of Kirkstall

Abbey, by Mr. W. E. Potter, printed by the Autotype Company.

Mr J. A. Forrest exhibited a drop-shutter, and some views of street scenes taken by its means. The latter had been sent to him by Mr. Weaver, of Runcorn. The pictures were much admired, particularly one in which a man on a bicycle was represented.

Drop-shutters of various constructions were also shown by the Chairman, Mr. H. Wood, and the Rev. H. J. Palmer, which were criticised and examined with much interest.

Mr. W. H. Kirkby exhibited an instantaneous view of the mouth of the River Mersey, with the "City of Berlin" entering the port. Mr. Kirkby also showed some specimens of local iodisation of gelatine negatives by means of a strong alkaline pyrogallie solution, applied to the dry negatives by means of a camel's-hair brush.

In a discussion on the necessity, or otherwise, of backing gelatine plates,

Mr. PALMER said he had found that orange paper attached by dextrine answered admirably, at the same time its removal before development was easy.

It was announced that there would be an excursion to Miller's Dale on Saturday, the 5th inst., by the train leaving the Central Station at 9 a.m., the members of the Manchester Photographic Society joining at Marple.

The Secretary was requested to arrange that the July meeting should be an out-door one on the Saturday instead of Thursday.

The meeting was shortly afterwards adjourned.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY.

At the meeting on the 2nd of May, Dr. VOGEL in the chair, a letter was read from Herr Reutlinger, drawing attention to the subscription that was being raised for a monument to Niephore Niepce; and the sum of 100 marks in aid of this object was voted by the meeting out of the Society's funds.

Herr SELIGMANN showed a series of transparent photographs received from Herr Talbot, apparently taken by the Woodbury process on transparent gelatine or leather collodion; also a number of double transferred carbon prints by the Autotype Company, of excellent quality. The latter are given partly in a blue, partly in a red, tint.

The PRESIDENT handed round a collection of beautiful American collotypes (called in that country Artotypes), produced by the Obernetter process from negatives by Kurtz and Sarony. He also showed a number of instantaneous pictures of the University Boat Race, sent to him by Messrs. Wratten and Wainwright. Notwithstanding the dull weather which, as the pictures themselves show, must have prevailed when they were taken, they exhibited very sharp images of the moving racing boats and steamers, and elicited loud expressions of praise.

Herr WIGHT reported on the results of his experiments with gelatine dry plates, and exhibited some of those that he had obtained. He had worked, he said, according to the directions of Mr. Bennett, but had found it better to use somewhat less silver, so that the salt of bromine was present in excess. He had dried the plates by artificial heat, and had had occasion to observe that they were reduced by too high a temperature. The emulsion he had kept in a fluid state during different lengths of time, and was able to corroborate the opinion which had been previously expressed, that the sensitiveness increases with the duration of the emulsification. All the plates that he exhibited excited general admiration for the purity and delicacy of the details. Herr Wight added that he had used Nelson's No. 1 gelatine, but hoped also to succeed with German gelatine.

Professor VOGEL recommended the gelatines marked "Extra" and "No. 1" of Lampe and Kauffmann, in Berlin, as being excellently adapted for gelatine emulsion.

Herr FAHLING reported on his trials of Obernetter's gelatine emulsion plates; he found that the emulsion flowed nicely, like collodion, and dried tolerably quickly, but was not as sensitive as he had expected, and could only be intensified with difficulty.

On the other hand, Herr WIGHT expressed a favourable opinion of the sensitiveness of Obernetter's plates.

Herr BERGMANN showed two negatives taken by Herr Lindner, with Obernetter's gelatine emulsion, in about one-third of the time required for a wet plate; they were found to be quite brilliant and intense enough.

The PRESIDENT referred to an interesting paper by Wollaston,

illustrated by sketches of Sir Joshua Reynolds, explaining the fact that a portrait painter or photographer looking straight to the front seems to be regarding the spectator in whatever position he may be placed.

Dr. FRIEDLANDER observed that Brewster had treated the same subject in his "Natural Magic," but had given another explanation of the phenomena.

Talk in the Studio.

SOCIETE IMPERIALE POLYTECHNIQUE DE RUSSIE.—The Photographic Society in St. Petersburg forms a section of the Imperial Polytechnic Society. At a recent meeting, the honour of election to corresponding membership was conferred on Mr. Wharton Simpson, the Editor of this journal, and communicated in terms of the highest courtesy, as a recognition of his services to photography.

BICYCLING PHOTOGRAPH.—Photographers interested in bicycling will be pleased with an instantaneous card photograph of the Hampton Court Bicycle Meet published by Mr. J. Thomas, 28, Tottenham Street, W., for sixpence. The majority of the riders and their machines are well defined; better, indeed, than the mass of lookers-on. The instantaneousity is undeniable, but the light has not been good.

To Correspondents.

AN OPERATOR.—The data you give afford no basis for an accurate calculation of the present strength of the bath. You state its original strength, and the number of plates which have been sensitized in the solution; but this gives but very little indication of the present strength. If you had stated the amount of collodion used, containing a definite amount of iodides and bromides, some idea might have been gained by calculating the amount of silver with which these salts would have combined. But a much simpler mode of ascertaining the strength of the solution consists in precipitating a small measured quantity of the solution by means of a standard solution of chloride of sodium. This will give you the strength with accuracy. Here are the details. Measure carefully with a dropping-bottle, or a minim measure, one hundred drops of the solution into a test tube. Then have ready a 35-grain solution of salt in distilled water, the salt being carefully dried before it is weighed. Now drop carefully the salt solution into the silver solution until no more precipitate is formed. The number of drops of salt solution required to complete the precipitation gives the number of grains of silver to the ounce of bath.

BROMO.—The allusion in the article quoted is somewhat vague; but we presume that the ferrid-cyanide tinging solution is meant, which has often been given in our pages and in our YEAR-BOOKS. In this, one drachm of persulphate of uranium is dissolved in ten ounces of water, to which one drachm of ferrid-cyanide of potassium in ten ounces is added. A few drops of a weak solution of chloride of gold are added. The mixed solution is used in a dipping bath gives a warm brown tone. It is generally known as Selle's solutions.

W. W.—There is no objection to using the plan you propose, or to the grooves being made of zinc. Remember, however, that it will be necessary to renew the solution often to secure perfect fixation.

B. Y.—We do not know of any one who undertakes such agency at the present time. If you call upon us by appointment we may be able to give you more detailed information.

OLD HYPO.—It is a great mistake to suppose that greater permanency was secured by the old hypo bath than by the present method of gold toning. It was given up because it was found to be unsatisfactory. See remarks in a short leader.

BENJAMIN MALLOCK.—Copies of the photographs can, we have no doubt, be had of the photographer, who would probably afford the other information required.

ROBERT HAMILTON.—The quickest way of drying a film of bi-chromated gelatine is to subject it to a current of dry warm air. 2. The fullest information on the platinum process of printing can be obtained of the patentee, or the Company working the patent, whose address is 2, St. Mildred's Terrace, Bromley Road, Lee.

S. SNEWIN.—The word Bolton was, by an error of the printer, substituted for Boston. Hence the return of your letter. Several correspondents in our next.

The Photographic News, July 11, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO DR. EDER'S EXPERIMENTS BEARING UPON CARBON AND COLLOTYPE PRINTING—THE INSTABILITY OF TOURIST APPARATUS.

Dr. Eder's Experiments bearing upon Carbon and Collotype Printing.—Dr. Eder's experiments upon the behaviour of gelatine and carbon hydrates in the presence of chromates and under the influence of light should teach photographers something more about the tissue they employ. His researches, as most of us know, have been very exhaustive, for Dr. Eder rarely takes up a subject which he does not earnestly and thoroughly work out. There are, unfortunately, at this moment, but few chemists who make matters photographic their study, the encouragement to do so, we suppose, not being very great. Of Dr. Vogel, Dr. Schulz-Sellac, Dr. Reissig, Dr. Schnauss, M. Merget, M. Poitevin, M. Davaune, Mr. Spiller, Mr. Crookes, and others who formerly did much in photo-chemical investigations, we now-a-days hear seldom, and, for this reason, we welcome more warmly Dr. Eder's valuable results. His researches were not confined to the examination of gelatine in the presence of chromates, but extended to gum and albumen, and, in fact, to most of those organic substances with which photographers have busied themselves in collotype printing, &c. Sugar in admixture with the chromates becomes sensitive to light, although in a less degree than gelatine; it does not thereby become insoluble, however, but only loses its hygroscopic qualities. Gum-arabic and gum tragacanth become insoluble in light if mixed with bichromate, and also lose their hygroscopic qualities. Dextrine, it seems, behaves like sugar, and albumen becomes particularly sensitive if mixed with bichromate. Gelatine forms a coagulated mass with chromic acid, which dissolves on heating. A mixture of gelatine and bichromate, shut off from light, remains unchanged in a dry state for a long time; but a moist mixture, kept at an elevated temperature, becomes, on the other hand, insoluble. The dry mixture is so sensitive that an exposure to light for the fraction of a minute is sufficient to render it insoluble in hot water. Dr. Eder has found that chromic acid under these conditions is in part reduced to chromic oxide, and in this way complications are produced which are not to be ignored. The oxidation product of the gelatine is formic acid, according to Dr. Eder, whose results we need not here further specify, referring such of our readers who desire to study them to that gentleman's original papers. His experiments only go to prove what we have frequently stated, that much more still remains to be discovered in respect to the behaviour of gelatine in the presence of bichromate, before we can regard carbon printing as a perfect art.

The Instability of Tourist Apparatus.—If we are not actually enjoying summer weather, we have arrived at that period of the year when it is usual to look for sunshine and think about one's holiday. Our readers who take a camera with them to wile away their leisure, and seek to bring back with them the scenes that have charmed them—preserving as much of their holiday pleasures as they can for winter use—will be turning their attention once more to travelling apparatus that requires repair or inspection; while those to whom the idea is a novelty will be looking about for suitable camera and stands to accompany them on a pilgrimage. There are many tourist equipments made now-a-days, for we are not referring just now to what a man who means business will take with him, but rather to him who has an eye to pleasuring rather than profit. The principal element in a travelling apparatus of this nature is that it shall be light or portable. Whether it is the rugged hills of North Wales, the placid waters and green meadowland of the Lake District, the wild grandeur of Norway, the rich foliage of Devonshire, or the bright landscapes of France, Italy, or Switzerland, that he determines to depict upon his

dry plates—for he is hardly likely to employ the wet process—the valuable qualities of lightness and portability are sure to be appreciated. If the tourist is unaccompanied, he will be able to carry little personal luggage along with camera, stand, and plate-box; but spread over a party of two or three, a small bellows camera and its belongings are not a serious addition. With the Warnerke roller slide the weight is still further reduced; and those who have some little experience of the flexible tissue will find this dark slide particularly convenient. Only Mr. Warnerke's tissue is not, of course, as sensitive as a gelatine plate. But lightness of equipment may, after all, be paid for too dearly, and this brings us to point out in what way some of the tourist paraphernalia that are made are decidedly wanting. A zephyr apparatus is all very well—the skeleton tripod, delicately-constructed camera, and tiny lens—but supposing them to be both of the most highly-finished workmanship, they lack one great essential—they are not sufficiently firm and stable when set up. The slightest breeze shakes the whole structure; and as small photographs are nothing if not sharp, the result is often worthless. For lantern transparencies, or for enlargements, for which purpose amateurs especially desire their work, unsharp pictures are unsuitable; and although one can tolerate objects being a bit out of focus, you cannot brook blurring, which is the result of vibration. Amateurs very often wonder why their photographs do not make good enlargements, and in nine cases out of ten it is because the pictures are not sufficiently sharp for the purpose. All care in focussing is thrown away if the gossamer apparatus on its frail tripod shakes like an aspen leaf. What, then, is desired is some wire and screw arrangement, or similar scheme, to render the tourist apparatus as stable as possible. Most photographers, after they have been out a few times, have a method of their own; and a ready one is to have recourse to any big, flat stone that may be handy, to weight the camera after the plate has been put in. Another is to employ, where possible, a wall or post or stone in lieu of the camera stand, and thus to ensure a steady pedestal. The great drawback to this *modus operandi* is that one cannot alter the height of the stand nor the aspect of the foreground, as can readily be done with a movable tripod. But it is nevertheless a contingency to bear in mind, and it is well to have one's camera so constructed that it can be focussed and manipulated upon a flat base of this kind, which is not often the case. At the same time, we think that when the tripod is employed, there might be some simple method devised—by tension of wires, &c.—to render the fragile structure as stable as possible. Of course the photographer has it always under his control to open and shut the camera during a blow or a breeze, and he may take his pictures very well at twice or three times, if he so desire; but all this means a certain amount of risk. He may, too, with a little care, shelter his small camera with an umbrella or his own self; but all said and done, the wind will blow the plate to and fro in anything like an exposed situation. The more solid the tripod, the more unlikely is the apparatus to move; but tourist photographers, if they happen to be pedestrians, need not themselves to carry an ounce more than is necessary. The gelatine plate will, in some way, lessen the evil by shortening exposures, and the tourist will find this an alleviation of the evil; but what he wants is more stable apparatus which shall be perfectly portable.

FRENCH CORRESPONDENCE.

MEETING OF THE PHOTOGRAPHIC SOCIETY OF FRANCE—
GELATINO-BROMIDE EMULSION PROCESSES—EMULSION OF
GELATINE WITH BARYTA—NEW TIPPING BATH—TESTING
ALCOHOL—ENAMELLED PICTURES ON A DULL GROUND—
NEW PHOTOGRAPHIC JOURNAL.

Meeting of the Photographic Society of France.—The approach of summer invites to the pleasures of a country

ife all those who are able to allow themselves that enjoyment. Both the philosopher and the operator are as greedy of their holidays as the school boy, who is now also eagerly looking forward to the moment that brings him his annual freedom from books and tasks. Every year, as masters well know, a time arrives when the interest of the scholar in his studies visibly declines, when the excitement of counting the hours that intervene between the present time and that of his liberty obviously distracts his attention. A similar preoccupation and restlessness is, no doubt, the cause why the transactions of our learned societies are from day to day decreasing in interest; there is a general feeling that the time for packing the travelling bag is at hand. This is certainly the reason why the agenda paper of the last meeting of the Photographic Society of France, held on the 4th inst., contained comparatively very little of importance. Of official announcements from the chair there were only two: one relating to the forthcoming exhibition at Montpellier; the other to the exhibition of art and science applied to industry, which is to be opened on the 24th of the present month, and will remain open until the end of December. This latter exhibition will be held at the Palais de l'Industrie in Paris, and will contain a special section devoted to photography.

Gelatino-Bromide Emulsion Processes.—On the resume of the principal articles in the foreign photographic journals being presented to the meeting, it was generally remarked how large a share of public notice is attracted to the great question of the processes with emulsions of bromide of silver in gelatine. M. Chardon pointed out, as regards this subject, that the importance, or rather the necessity, of properly selecting the gelatine to be used in the process could not sufficiently be insisted on. According to M. Chardon, the general opinion appears to be, that no value attaches to the quality of the gelatine, and yet a good gelatine is often the cause of a successful result. Such a remark, from the lips of a man whose whole time is devoted to the study of this popular process, deserves the greatest attention. Generally speaking, the conclusion arrived at, as a result of the discussion of the emulsion processes which so often arises at the meetings of our photographic societies, is that a reliable manual for the guidance of those who work the processes is greatly wanted. The various formulæ differ very considerably from each other, and no one knows which one to employ preferably. Those who work with the same formula often obtain diametrically opposite results. A success which, in another instance, with precisely the same method of operating, is a failure, ought not to be so often recorded. In fact, photography should not be capable of affording material for the reconstruction of the Tower of Babel. It is a question of being able to speak the same tongue to render oneself intelligible. The publication of a sound and standard handbook to the gelatino-bromide process is loudly called for in France as well as in other countries. If some co-ordination of the various methods be not soon successfully attempted, the exceptional favour with which the process is regarded will soon be put an end to; it will die out like a bright fire of straw. It would seem highly advisable to put this general wish on record, in order that some technical and capable operator may respond to it.

Emulsion of Gelatine with Baryta.—Among the papers read at the same meeting, it may be right to draw attention to a note by M. Chardon, describing a method of emulsifying gelatine with baryta so as to obtain a substance resembling roughened glass. On this one of the members present exclaimed that more than eleven years ago he had produced imitations of roughened glass by means of barium sulphate, and he declared that at the time he had publicly exhibited specimens of his manufacture. This shows, perhaps, that processes which are really good often take a long time in coming into use,

and that at the present day, especially, no one must be in a hurry to claim for himself a new discovery. Better, however, is a re-discovery than that the process should be forgotten altogether.

A New Tipping-Bath.—M. Gobert exhibited to the meeting a tipping-bath of his own invention, which will be of great service, as by means of it development can be protracted for so long a time as may seem desirable. This is another trump card for the gelatino-bromide process, one of whose essential conditions is a slow and regular development.

Testing Alcohol.—At the same meeting M. Bardy exhibited one of Savalle's diaphanometers, an instrument which, though largely used in the wine and spirit trade for determining the commercial value of alcohol, seems not to be sufficiently known among photographers. *Apropos* of this apparatus, a discussion arose on another point which is not wanting in importance. This point is, that operators are not in the habit of submitting to test the alcohols that they employ in their work. And yet the testing is a very simple operation; according to M. Bardy, it is merely necessary to heat a measure of alcohol with its own volume of sulphuric acid to a temperature of 66° C. If the mixture discolours in boiling, the alcohol is unfit for photographic purposes. It must not be forgotten, added this able chemist, that the inferior quality of the alcohol used in some processes is often the source of a failure which is generally attributed to some other cause. For this reason a photographer should never employ an alcohol, though it may have been obtained from the first distillery in the world, without submitting it to a test, which is as reliable as it is easy.

Enamelled Pictures on a Dull Ground.—A very simple means for obtaining on a glass plate, prepared for the purpose, the image alone in enamel on a mat ground, was described by M. Leon Vidal. It is only necessary to roughen the glass all round the oval or rectangular space reserved for the image, by rubbing it for about half-an-hour with emery powder.

A New Photographic Journal.—After mentioning the presentation of the results of their investigations by Professor Stabbing, Dr. Colin, and Messrs. Braun, Ziegler, Balaguy, and Sauvager, I shall have given a full account of the transactions of the meeting, with the exception, perhaps, of the exhibition by several manufacturers of some samples of their most recent work. Talking of manufacturers, it may not be without interest to mention the appearance of a new photographic journal, initiated by Messrs. Guilleminot and Co., published fortnightly by the same firm, and issued gratuitously to their customers. This journal bears the name of *Petite Gazette de la Photographie et des Arts qui s'y rattachent*; its object may be gathered from the following introductory note to its readers in the first number. "The *Petite Gazette de la Photographie* will contain neither leading articles nor advertisements. We are anxious that by means of it all which ought to be known in the domain of photography should be known. Everything worthy of notice will be recorded in it without distinction of country, without respect to person. If by any chance the special organs of our art should fail to draw attention to some valuable discovery, we shall be only too glad to fill up the blank; it will be only necessary to inform us of it. Our columns will be hospitably open to all comers who can render us information. Photographers are invited to give us intelligence of their methods and their improvements; inventors may use the *Petite Gazette de la Photographie* as an advertising agent. There is nothing to pay—not even on leaving; we offer to the public a free channel of communication. Should a photographer in the north want to know something which occurs in the south, our *Petite Gazette* will make his wants known. If any one be anxious to make a general appeal or to ask some special question, our gratuitous post office is open to him; it will be the fault of the correspondent to whom he addresses himself if he does not

receive an answer by return. In short, we wish to make of our little paper a regular medium for gossip, not in the fashion of scandalmongers who talk sometimes for the sake of talking, and always to promulgate some untruth, but as a useful and serviceable means for the interchange of ideas, promptly and openly as in the case of the telegraph. We hope to be ourselves like photographers taking advantage of the action of light, which catches and registers the image, leaving the rest to development, and which conceals nothing, not even the defects." A publication with such a programme will not only be a source of profit to the house which so liberally bears the expenses, but also is likely to render important services in aid of the general interests of photography. K. VERSNAEYEN.

PRACTICAL METHOD OF WORKING GELATINO-BROMIDE PLATES FOR THE STUDIO.

BY A. J. JARMAN.

As enquiries are constantly made about the gelatino-bromide process, as to how plates can be prepared at home, I will venture to give a method that is sure, and, at the same time, easy to manage in the hands of any one possessing a small amount of knowledge in photographic manipulation.

First procure a new tin saucepan, with a close-fitting lid, to hold not less than one gallon of water, and inside the saucepan, on the bottom, solder a piece of tin in the shape of a cross edgewise, so that on it can stand a common earthenware salt jar; around this jar put some water, and also in the jar. Place this upon a three-legged iron stand, and heat it carefully with a jet of gas from a common burner, *not a gas-stove or Bunsen burner*, as these give too much heat. The temperature of the water must be raised to about 90° or 100° Fah., but must never exceed 100°. Now procure a common pyrogalllic acid one-ounce bottle, clean it out thoroughly, and wash the cork well; take a piece of linen about four inches square, and place the cork in the centre, bring the ends of the linen over the top of the cork, and tie them tightly around the cork with a piece of string. This will enable you to pull the cork out easily, as the gelatine is apt to hold rather tightly. Now take of Nelson's No. 1 or No. 2 gelatine, 210 grains; ammonium bromide, 87 grains. Put both of these into the wide-mouthed pyro bottle, and pour upon them 3 ounces of distilled water; put in the cork and shake well. When this has soaked for fifteen minutes, place it in the earthen jar and put the lid of the saucepan on. Keep this all at 90°, which is easily done by placing a gaslight, not larger than the flame of a nightlight, about an inch from the bottom of the saucepan. Put into a glass measure 3 ounces more of distilled water, and 130 grains of nitrate of silver; stir well with a glass rod. When dissolved, pour this into a narrow bottle, cork down, and put in the jar of warm water alongside the gelatine. In the course of half an hour take out the pyro bottle containing the bromized gelatine, and shake it up well; wipe the bottle carefully, and wrap it up in stout brown paper. Fold the paper under the bottom of the bottle, and seal it with sealing-wax, also up the side; leave the top undone. Your silver solution is now of the same temperature as the gelatine. Take both into the dark room, and pour the silver nitrate solution into the bromized gelatine; put in the cork, and shake vigorously for a few minutes. Twist up the brown paper all over the top of the bottle, cork and all, and place it in the jar; put on the lid, and keep at the before mentioned temperature for four or five days, shaking well twice a day. Bear in mind it must be kept warm all night as well as all day, and if very great sensitiveness is desired keep it warm for seven or eight days.

The above method of digesting of course belongs to Mr. Bennett, and thanks are due to that gentleman for publishing such an admirable discovery. The formula given

contains more silver bromide than Mr. Bennett's, although his is an admirable formula when carefully worked.

All being ready now, we take the bottle of emulsion into the dark room, and pour its contents into a porcelain pan of about 8½ by 6½ inches capacity, and allow it to set, of course carefully covered up from all actinic light. During the present damp, warm weather, I have been obliged to place the emulsion, after it has cooled and still in the pan, on some pieces of ice, so as to get it thoroughly set. This done, the emulsion is cut into pieces, and placed in a piece of canvas of the coarsest description, employed by ladies for Berlin wool work. The four corners of the canvas are brought together, twisted up tightly, and carefully, but quickly, drawn through the left hand, and the emulsion that oozes through the canvas allowed to drop into an oblong box, the bottom of which is made of four thicknesses of muslin tacked on. Scrape the emulsion off the hands with a bone knife, and also the remainder of the canvas; put all into the box, and pour water from the tap upon the emulsion, and shake it well while the water is running. This must continue for five minutes; then allow it to stand and drain. This done, pour one pint of distilled water over the emulsion, and let it drain again for half an hour. This done, scrape it from the box into a small milk jug; place the jug in warm water, and add half an ounce of pure alcohol; stir well with a bone knife, and filter into a four-ounce glass measure through a piece of damped muslin doubled into four (say three ounces are filtered). Leave the remainder in the jug to keep warm.

Take a sheet of 32 oz. glass, 3 feet by 1 foot 6 inches, and level it by means of a spirit level and window wedge upon a bench or table; it must be perfectly level, or the gelatine will run all to one end. Suppose three dozen quarter plates are cleaned, take one in the left hand and coat it from the glass measure just like collodion, but do not pour all the emulsion off the plate, for if you do, thin, blurred negatives will be the result. Enough emulsion must be left upon the plate to give it quite an opaque appearance; place it upon the levelled glass, and let it set; continue in the same way until the levelled glass is covered, and, when set, put into a drying box to dry. When dry, take one and expose it for a full-length picture (say two or three seconds at the most), and develop with the following:—

Freshly-made pyro solution	
Distilled water	2 ounces
Pyrogalllic acid	5 grains

Have ready, mixed in a bottle, the following:—

Liq. ammonia, fort. 880	½ fluid ounce.
Distilled water	1 "
Bromide of potassium	60 grs.
Bromide of ammonium	30 "

Take 15 minims of this, and let stand ready in a minim measure. Put to your pyro solution one drachm of methylated spirit; place the plate to be developed in a small porcelain pan, and pour on the pyro solution. Keep the pan in motion. Put the 15 minims of ammonia into the measure that held the pyro, and pour from the pan the pyro, and instantly return all over the plate; in from six to twelve seconds a most beautiful negative is the result—in fact, all that one could wish for. Wash off the developer with four ounces of water containing two drachms of methylated spirit, and fix in the following:—

Hyposulphite of soda	10 ounces
Water	20 "
Methylated spirit	2 "

When fixed thoroughly, wash off the hypo. with a little of the spirit and water used to wash off the pyro. Place the plate in a pan, and cover it with—

Water	10 ounces
Spirit methylated	½ (or 1) ounce

allow it to soak in this for about five minutes, rocking

the dish occasionally. Take out the plate, and drain; then, from an ounce measure, pour on to the plate half an-ounce of methylated spirit, pour this on and off for about one minute; stand the plate on its edge on clean blotting-paper, and in ten minutes it is perfectly dry and fit to varnish.

Now, I have found the use of methylated spirit in all the solutions a perfect preventive of frilling. Plates that frill with water alone will not do so anyhow when methylated spirit is employed. This piece of experience I have obtained after using in experiments upwards of one hundred dozen plates.

Now we come to an important part of the gelatine process, i.e., how to intensify a weak negative. With me the following is perfection:—

Pyrogallie acid	60 grains
Citric acid... ..	80 „
Distilled water	12 ounces

For a quarter-plate, two drachms of the above and two drops of strong nitric acid to six drops of the silver nitrate solution twenty-five grains to the ounce of water. Let the negative dry first, then moisten it in a pan of clean water; take it out, and immediately pour on the intensifying solution. The dark-room door must be closed. The weak negative will gradually gain in strength, until perfect printing density is obtained, when it may be washed with water, and dried.

With plates prepared with the formula given here, or with Mr. Bennett's formula, I have never known this intensifier to fail.

I sincerely hope that what I have here written will be of great service to those seeking accurate practical information, as it has been gained by a large amount of experience extending over six months.

PHOTOGRAPHY IN HOT WEATHER.*

AMONGST the various pursuits that may be regarded as "up-hill work," photography in hot weather may certainly take its place. Not only are the incumbences doubly heavy, the dark room or out-door tent doubly stifling, but, worse than all, the chemicals, like spoilt children, are doubly troublesome, and just at the time, too, when you wish them to be on their best behaviour. Of course, one philosophises and invokes patience—prepares a plate with infinite care—in short, does everything most scrupulously clean, only to find a foggy landscape, or a sitter's face the exact counterpart of mottled soap, as results. Such, at least, are the statements that reach us from several of our subscribers, who appear to have exhausted all known remedies, and tired out the patience of photographic friends by their clamorous demands for help. One writer remarks that he has converted a friend into a bitter enemy by his unsuccessful attempts to procure aid, for the said friend, as a photographer, of whom it has been the custom to remark, when any unusually stubborn difficulty arises, "Oh! ask A. about it; he'll be sure to get you out of it!" But lo! even he has no remedy for hot weather. Hence it arises that we are now the recipient of this tale of trouble, not so much in the hope of our being able to administer relief, as to afford at least our sympathy.

We have, however, really so many complaints on the same subject—difficulties from temperature—that instead of replying in our answers in "Bureau of Information" to halt the letters of the alphabet, we propose to discuss the matter here for general reference.

It must be borne in mind that, as a rule, chemical action is exalted in proportion to the temperature, while in some cases, re-actions of a very energetic character become totally arrested as temperature becomes reduced. We may add, by way of illustration, the phenomena of fermentation and decomposition. Is it, then, surprising that the operations, necessarily of a delicate nature, upon which photography is

altogether dependent, should, in like manner, be subject to derangement?

The various ingredients employed by the photographer are each intended to play a special and definite part under certain conditions, one force being restrained by another until such time as it is possible for it to perform effectively under those conditions. If, then, the condition be altered (in our case a given range of temperature), the balance of power becomes disturbed, and we have nought but trouble and confusion instead of harmony and order.

Let us consider now what are our difficulties. First, fogging of the plate in warm weather, whilst in temperate weather the same bath and chemicals yield satisfactory pictures. Now, suppose the bath to be neutral, or very slightly acid, the fogging generally arises from too small a quantity of acetic or other restraining acid in the developer. We call these vegetable acids restraining acids, when thus applied, because when present in sufficient quantities they restrain the reducing action of the developing agent (probably by supplying oxygen) for a certain moderate amount of time, excepting where, under the influence of light, an amount of actinic force has been acquired sufficient to overcome this restrictive action, the amount varying with the temperature. When acetic acid is employed, which is a volatile substance, if the developing solution happen to have been mixed for some little time, in warm weather, it soon parts with a portion by vaporisation. In any case, however, the quantity of restraining acid required is always more in hot than in cool weather.

Some photographers attempt to make a compensation by extra acidity of the nitrate bath, and certainly this proceeding will to some extent remedy the evil; but it is one that we can scarcely approve, because, although the requisite force is supplied, it is not brought into play at the best moment, previously to which time it is positively injurious. Nitric acid is most effective in removing fogging, but, unfortunately, it also produces materially impaired usefulness for the reception of the actinic impression. Moreover, the nitrate bath then requires restoration to its neutral condition on a return of ordinary temperature. We are strongly of opinion that it is highly desirable to keep the nitrate of silver in as uniform condition as possible. It cannot be denied, however, that under a very high temperature it is almost impossible to secure clear plates without the presence of a very minute quantity of free nitric acid, and when this is the case, we much prefer to introduce it by means of a little free iodine in the collodion, which gives it just where we want it, and in manageable quantities when we require.

The sum of our argument, then, is as follows: In hot weather double the quantity of acetic or citric acid in your developing agent, and if you still get foggy negatives, add a drop or two of weak solution of iodine in alcohol to your collodion, enough to tinge it of a pale yellow colour.

We now come to our second annoyance—a mottled appearance of the plates when removed from the sensitising bath. This we believe to be due to the unequal evaporation of the ether and alcohol from the collodion before immersion of the plate in the nitrate bath. We have frequently experienced this inconvenience personally, but have invariably found a remedy in the addition of a little strong alcohol to the collodion, and allowing a longer time for it to set before immersion of the plates in the bath.

IS PHOTOGRAPHY, AFTER ALL, AN ART?

A CORRESPONDENT of our St. Louis contemporary, writing on the art claims of photography, says:—

As far as photography is identified with nature, it is an art; beyond that, it is science. If photography claims the right of being introduced as a competitor with art, it is the operator who must usher it into these sacred halls.

At present portraiture claims the largest share of attention amongst professional operators, and the bulk of them are neither artists by talent, feeling, or education. The very essence of art resides in the poetry of it, and with-

* Practical Photographer.

out imagination there is an end of poetry. We need only visit the different photographic galleries, and we shall soon perceive the defects of art, which, however, lay in the photographer, and not in photography.

As regards portraiture, the living model is seen in ever-shifting positions and ever-varying aspects of light and shade, very few of which, however, it may be, would be suitable for portraiture, notwithstanding that they are all natural.

That a portrait should be what some call natural does not, therefore, by any means imply that it is perfect as a picture. It may be natural that a person should, at some time, smirk, frown, gape, stoop, loll, or stretch himself, but no one would for a moment dream of perpetuating these actions in a portrait. Notwithstanding, I have seen many photographic portraits in positions little better.

Sitters placed in a chair bolt upright, with head, body, and limbs in one line, a hand thrust forward sprawling on each knee, all arranged with such accuracy that, if the figure were cleft down the middle, the halves would weigh the same to a fraction! The expression accompanying this attitude being generally one of the most listless fatuity, or with every muscle on the strain, the eyes glaring, and the features contracted to a most diabolical frown, the idea is conveyed that the sitter is just gathering his energies for a fatal spring upon some victim. Others, again, carefully avoiding these enormities in arranging the sitter, affect positions of unstudied ease and carelessness, in which, however, everything like grace or dignity is alike wanting. The so-called "composing photographic artist," having exhausted all the stock of his ingenuity in discovering new graceful bendings of arms, hands, and fingers, or a new class of charm for a bodily turn, at length turns his attention to a "photographic impression," full of the above-named cardinal blunders, which of course no one but himself calls a picture!

Such photographers must not only give up their favourite notion that they have only to depict nature to succeed, but also that the most perfect photograph is a pleasing picture!

In thus referring to the defects of photographic pictures, I must not be understood to depreciate our marvellous science. I simply insist that operators who call themselves photographic artists ought, above all, to study the laws by which the painter secures the semblance of nature; he ought to learn how to arrange his subject and choose his point of view; how to secure a proper balance of light and shade, and, in short, how to produce a picture instead of a mere diagram; he ought to be educated for art before he steps to the camera, and if untalented, or a man of no refined feeling or poetry, to keep himself employed in some other branch of social life than one which claims the finest taste of imagination, unmeasured talent, extended intelligence, and the most careful artistic education. The most enthusiastic photographer has often felt his failure here, and has acknowledged that a most complete education of art is pre-eminently needed to succeed in procuring a perfect photographic picture. If, however, attitudes of single figures are so difficult to obtain (pictures pleasing to the eye and to the heart), no one will, I presume, deny that composition is the most difficult department of photography; and does it not, therefore, follow, that it should only be practised by those who have a true artistic feeling?

It certainly is not a little surprising that the leading composite photographers seldom or never attempt the composition of a stereogram. Is it, therefore, not the height of absurdity for men who have not the least sentiment or poetry about them to attempt to illustrate artistic studies from life, or compose a picture? If these would-be artists wish to display their cleverness, why not turn their attention to the hundreds of other subjects which might be mechanically done, and leave that department which is acknowledged by all to be the most difficult, for those who can do it?

If we want to arrive at the point to introduce photography as an art, then the operators must, besides having knowledge of chemistry and optics, be men of talent, refined education, artistic feelings, high sentiments—in short, perfect artists.

A METHOD OF WORKING THE GELATINE PROCESS.

BY E. FERRIER.*

The gelatino-bromide process affords an immense advance upon the old dry methods, by reason of the ease of its preparation, its economy, its great sensitiveness, the absence of all danger in the substances required in its formation, and the banishment from the laboratory of three dangerous products—explosive cotton, alcohol, and ether. My son and I have succeeded in working out a method for its preparation which will enable all persons who practise photography to work it with success and certainty. Here are the details of this process in all their naked simplicity. Place in a bottle one ounce of ordinary water; add 150 ounces of white gelatine of the first quality. The gelatine is then dissolved in the hot water bath with four grams of bromide of ammonium, and seven grams of crystallized nitrate of silver are dissolved apart in the necessary quantity of distilled water. This solution is poured into the bromised gelatine, well shaking the bottle, and it is left about an hour in the hot water bath to facilitate the combination of the bromide and nitrate of silver. The emulsion is then poured into a tray or porcelain dish, and it is left to get cold, when it is scraped up in small portions with a silver spoon and placed in a large jar full of ordinary water, which is agitated from time to time, and renewed five or six times in twenty-four hours.

After this space of time the jelly is withdrawn from the water, drained on muslin, and then introduced into a yellow glass bottle and re-dissolved in the water bath when it is desired to coat plates, which is done in the following manner. Commence by warming the plates; afterwards pour upon the middle of the glass sufficient to cover the whole, and with a glass rod or brush spread it all over the surface; then place the plate on a cold marble or plate-glass slab perfectly levelled. When the gelatine is set, the plates can be placed upon a support and kept in a position where the temperature is slightly raised, taking care the obscurity is complete, because the least light will impress them infallibly. The drying occupies twelve hours, or less may suffice, as it depends on the quantity of heat and the circulation of air in the room. When perfectly dry, they ought to keep a very long time; but this trial not having been rigorously made, it is not yet possible to state precisely the duration of their keeping qualities.

This is how the image is developed. Two solutions are made:—

	No. 1.	
Distilled water	100 cub. cents.
Pyrogalllic acid	1 grain
	No. 2.	
Water	1,000 cub. cents.
Liquid ammonia	15 "
Bromide of potassium	5 grams.

The film is soaked in ordinary water, then covered with solution No. 1 for one minute; now add an equal quantity of No. 2; and this mixed solution completes the development. If it become strongly coloured before the image is completed the plate must be well washed, and the development continued with a new mixture of the two solutions. It is washed when finished, and fixed with hypo. It sometimes happens that the film of gelatine lifts during development, which is a serious inconvenience. To prevent this, add to the emulsion two or three drops of a 5 per cent. solution of chrome alum.

* Read before the Photographic Society of France.

The Photographic News.

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PHOTOGRAPHS OF SPRING BLOSSOMS.

We have been favoured by Mr. L. Berry, of Chorley, with examples of some excellent photographs he has recently produced of the spring blossoms of flowering shrubs and trees—an application of photography which, as he very rightly remarks, is much too rarely attempted. The examples before us include lilac, horse-chesnut, and hawthorn, each making a charming picture, photographed about half the size of nature upon a ten by eight plate.

Few photographers would believe, until they had made trial, what a pleasing and picturesque effect is produced by a good photograph of a well-selected bough from a flowering shrub. And besides securing pleasing pictures, studies of considerable scientific value from a botanical point of view may be obtained. To secure this, a little prior botanical study would be desirable, so as to understand how best to deal with each subject. A complete series of the blossoms of flowering trees and shrubs indigenous and cultivated in this country would be of great interest and value. But to obtain these, some knowledge of the habitat and season of blossoming would be necessary. For whilst many flower in spring, like the hawthorn, lilac, ribes, chesnut, laburnum, wisteria, &c., there are also many of the shrubs, like varieties of the hibiscus, althea, &c., which blossom in late summer.

If any of our readers be at a loss for something quite fresh at the forthcoming Exhibition, where medals for special excellence in unnamed directions may await them, we commend to their attention such a series as we have indicated. The study would be itself a delightful and an improving exercise, which to many would prove its own reward. No course of exercise would better serve to practise the student in mastering all the ins and outs of technical photography. For the work would need doing well, and would develop in the student a familiarity with all that photography can effect. The pictures must be perfectly modelled and full of gradation, and carefully defined. To secure good definition in all parts, it would be desirable to use a small lens, producing the negatives (say) card size, then carefully enlarging afterwards, as the pictures should not be less than half the size of nature. A little care in grouping and securing effective light and shade would be necessary. Where it could possibly be managed it would be desirable to photograph the blossom as it was found hanging on the tree. But in some cases this would be

difficult, if not impossible. It would then be desirable to secure a good-sized branch, and, if possible, keep it in water from the time it was cut until it was photographed, so that no appearance of wilting or withering may be presented. Bloom just opened and just opening should be selected, as over-blown examples are uninteresting. Sufficient leafage should always accompany the blossom to maintain the character, and in some cases it forms half the beauty of the picture, as in the horse-chesnut, for instance.

At the last one or two Exhibitions no floral photography has been exhibited. We hope to see at the next many fine examples of various phases of this interesting branch.

PREPARING AND WORKING GELATINE EMULSION PLATES.

THE subject of gelatine emulsion has been constantly brought under the attention of photographers for some years, and many papers containing instructions for their preparation and use have appeared. It is only within the last twelvemonth, however, that photographers generally have been brought to a knowledge of the great possibilities which these emulsions possess, and we have of late received repeated enquiries from photographers, who have previously given no attention to the matter, for a clear and succinct statement of the operations. Most of the papers which have recently appeared on the subject have, they complain, been chiefly devoted to modifications and improvements, a knowledge of the general operations being pre-supposed. This is a very natural condition of things. Photographers who read their journals, and occasionally experiment and verify what they read, are *au courant* with the constant progress of their art. But the Rip Van Winkles, who suddenly wake up to find that mighty changes and improvements have been made whilst they slept or gave no heed, have often much leeway to make up when they wish to get the advantage of the mighty wave which is floating others on the tide of success.

As a rule, we can only refer enquirers back to various published articles. We are enabled this week, however, to aid those anxious to work the gelatine emulsion process, and have failed to keep abreast with the times in information, by a very complete statement of all the practical details of the process, stated simply and clearly and plainly by a practical man, who has worked his way through the difficulties to a complete success. We are indebted for this to the courtesy of Mr. Jarman, of Ramsgate, who sends examples of the excellent results obtained in the studio by the process he describes. Mr. Jarman emulates the spirit of the old pioneers of the photographic art, to whose enthusiastic liberality the very existence of the art is due.

At the present moment the bulk of the gelatine plates used are prepared commercially, a system which has all our approval. For it is certain that if the photographer can be fully employed in producing negatives on trustworthy plates he can purchase, it will answer his purpose better to buy than to prepare his own plates. But it is very desirable that he should be able to prepare his own plates, and rely upon them in emergency, when he might possibly be unable to buy a stock upon which he could safely depend. We know one of the best makers who will only send out such plates as are prepared under his personal superintendence, and his customers have at times to wait until a fresh supply can be prepared. Each customer should, under such circumstances, be able himself to prepare for immediate necessities. And the article of a practical man, to which we call attention, will materially aid them, and save the necessity of much back reference.

PHOTOGRAPHIC SOCIETY OF IRELAND.

WE are glad to be able to announce that a Photographic Society for Ireland is once more an accomplished fact, and will, we hope, prove a success. From the programme and rules now before us, we learn that the project will resemble that of other similar societies in this country. The meetings will be held monthly, on the second Wednesday of each month. The first meeting was announced, for the ninth of the present month at the Queen's Institute, when papers on the gelatino bromide process would be read and discussed. The first president of the Society is Dr. Emerson Reynolds, a name well known to photographers. The secretary is Mr. Alexander Conan. The entrance fee is ten shillings, and the annual subscription the same amount. We wish the Society all prosperity, and shall have pleasure in chronicling its proceedings and progress, if the Secretary will kindly communicate such matters as he can for insertion in our pages.

NEW PROCESS OF PHOTOTYPE.

Our valued French correspondent, M. Léon Vidal, in his letter which appeared in our last week's issue (page 319) refers our readers to his article published in the *Moniteur de la Photographie* of the 1st June, for a description of the process by which he produces a colotype block ready to be printed with ordinary type. For the benefit of those of our readers to whom our French contemporary is not available, we reproduce here a translation of that portion of the article which gives an account of the new process.

Phototypic is a sort of lithography in which the stone is replaced by a hygroscopic layer of gelatine impressed with an image by the action of light passing through a photographic negative. Now, if we could cut down a lithographic stone both in its surface dimensions and its height, to make it like a wood block, we should be able to insert it in the text, and take an impression from it simultaneously with that from the type. The difficulties in the way of doing this would be, firstly, the necessity of wetting the stone previous to each impression; and, secondly, the expense of cutting down lithographic stones, which would entirely lose their value in the process. But what we are on this account prevented from effecting with natural lithographic stones can be managed with an artificial one, provided that the latter possesses an hygroscopic surface from which, after being saturated with water, numerous impressions can be taken without its being necessary to wet it afresh. It became, therefore, necessary to make photo-printing blocks of the requisite size and height to be set up in the forme with ordinary type, and possessing so great a hygroscopic quality that the moistening requisite to produce an impression should only be an accidental operation, and not one that is indispensable before each pull.

Now the ordinary process of phototype was scarcely adapted for this purpose without modification. The plates in this process are made of metal, or glass, or even lithographic stone, always larger than the image of which it is required to obtain an impression, and it would be impossible in every case to cut these plates to the size of the printing block. M. Vidal adopted another method for arriving at the same result as that produced by ordinary phototypic. He prepares the artificial lithographic stone and the hygroscopic support separately, and then attaches the one firmly to the other. The image is obtained as in the ordinary carbon process; an impression on carbon tissue is developed on a roughened glass plate coated with some fatty substance. When, by means of hot water, the picture is divested of all the gelatine not acted on by light, it ought to appear with all its half-tones like a good carbon print which is ready to be transferred to its definite support. This is then enclosed in a frame of thick cardboard, bevelled outwards on the inside, and coated entirely with paraffin or wax; the frame is then

filled with the following composition, which is poured into it and over the picture:—

Gelatine	...	...	20 grammes
Gum-arabic	...	...	20 "
Glycerine	...	...	40 "
Water	...	...	100 cub. centim.
Ammonia	...	...	5 cub. centim.
Alum	...	...	0.5 gramme
Salicylic acid	...	...	2 grammes
Barium sulphate	...	...	10 "

The salicylic acid is added as an antiseptic, and the sulphate of barium gives to the layer of gelatine an opalescent appearance. The whole layer should be so deep as to have, after drying in the chloride of calcium box, a thickness of about five millimetres. When the desiccation is complete, the layer above the glass plate is turned out, and will be found to have the image transferred to it. We have now, therefore, a plate of gelatine bearing on it the picture of the exact dimensions required, and bevelled downwards from the edges, which latter will therefore not take any ink. This plate must then be mounted on a sheet of copper or zinc, which is raised on a wooden support until the height of the image is the same as that of the type with which it is to be printed. The gelatine plate is next saturated with moisture by immersion for a quarter of an hour in a bath composed of—

Glycerine	...	...	50 grammes
Water	...	...	50 cub. centim.
Alum	...	...	2 grammes

and the image will appear on its surface in considerable relief, so as to render it particularly well adapted for printing from. The separation of the black parts of the picture from the white parts of the hygroscopic gelatine is very perfect, so that no smudging, such as so often occurs with printing blocks on which the shadows are modelled by fine lines close together, need be feared. The mixture of which the formula is above given is of so hygroscopic a character that repeated wetting is rarely necessary. It must be effected with a sponge dipped in a mixture of half water and half glycerine, after having removed from the plate all trace of ink; but the latter should never be severely washed.

In this way, then, we obtain a carbon print, but with a light-coloured pigment, so that the degree of inking can be readily determined. Light-coloured earths in the form of impalpable powders, with a gelatine chosen for its resistant properties, make a very good tissue. The print should not be treated with alum before pouring on the layer of hygroscopic gelatine, otherwise it will not transfer easily. On the contrary, it is better to wash it with water containing a little ammonia, which will facilitate the penetration; the mixture already contains some ammonia, and the transfer of the image to the plate of glycerine and gelatine is thus rendered completely effectual. The alum contained in the first liquid used for moistening increases the hardness of the image, and prevents it from swelling too much.

It is easy to imagine what advantages can be derived from a process of this kind, which enables us to produce, at a moderate cost, plates capable of being inserted among type for the printing press. A number of different blocks obtained by this method can be mounted in the same form with the type of the text, and can be pulled all together in the press. They can be used in cylinder presses also, without any difficulty. Until the contrary is demonstrated, M. Vidal believes that this is the only process by which photographic printing blocks capable of being printed simultaneously with type can be produced.

A BIT OF PRINTING EXPERIENCE.

BY W. T. WILKINSON.

IT is some time since I have had any trouble with the printing department, as I was scarcely prepared for a series of troubles met with during the last fortnight.

For my first batch of prints I made up a new silver solution—sixty grains to the ounce made neutral by the addition of carbonate of soda—floated the paper three minutes, and the results in the printing frame gave me no uneasiness; but in the toning bath no other colour could be got but a very cold and slaty blue, very poor and flat, without vigour or richness. My first idea was that the paper I was using required an acid bath, so I added nitric acid to the bath until very slightly acid; but on printing paper sensitized upon it (floating one minute to three or five minutes), the resulting prints were exactly the same as before.

The bath was then made alkaline with ammonia, and the paper floated three minutes with slightly better results. I then set to work and made a fuming box, floated the paper one minute, and fumed ten, and lo! my troubles were ended. I got prints that left nothing to be desired—*except permanence*.

Now this bit of experience has suggested a reply to the query I have often seen in the journals, viz., why was ammonia fuming so extensively practised in America, and so little in England. It also gave me a clue to bad prints in England during the height of summer. In America, as here, the atmosphere is very dry, as it is in England sometimes when the thermometer gets over 90°. Under these conditions there is not sufficient moisture present in the paper to give the requisite vigour during printing, and if the reduction by light is not sufficient, the gold cannot give a vigorous colour, and ammonia fuming supplies its place.

My experiments in Ceylon bear out this view of the case, as I well remember, during the dry winds of the N.E. monsoon, I found a great advantage accruing from ammonia fuming, but did not find any appreciable difference in the prints; when last June (the rains having set in) I was obliged to discontinue its use on account of not having any ammonia in stock.

If, during the present summer, any difficulty is experienced in getting vigorous prints, I venture to predict that fuming the paper before printing will be found an effectual remedy, and as the time of floating can be reduced to one-third, the saving of time will be found to more than counterbalance the cost of ammonia and trouble of fuming.

As the most engrossing theme in the journals just now seems to be dry plates (collodion and gelatine). I may say that I have been working with both processes, and have found them everything that could be desired. On my way up here I used plates prepared with collodion for still life, and gelatine for subjects requiring quick exposures, and although in many cases the exposures given were abnormally short, I got better results than could be got with the wet process; especially under the circumstances then ruling. The only difficulty I have ever had with gelatine was the absolute necessity of having all solutions cold, and also being careful that the negative was dried in a cool place. Perhaps a bit of experience on this point I met with in Ceylon may be instructive.

One day I had brought me six of Wratten and Wainwright's gelatine plates to develop, that had been exposed on board ship; the first negative was all right until washing after fixing, when away the image went down the sink, much to my disgust. Operations were suspended until ice could be put into the tank containing the washing water, when the other five negatives were developed, and washed without accident; and as the owner was going away quickly they were left to dry on a rack upstairs in the studio, just away from the hot part of it. Three stood the treatment all right, but on the other two the film had run slightly, giving the most grotesque image it is possible to imagine, and suggesting that the camera, ship, and the group of passengers had all been very seasick at the time. Of course, in such a climate as Ceylon, collodion emulsion is easier to manage; but, alas! the speed cannot be com-

pared with gelatine, although the ferrous oxalate developer may help collodion up a little; at any rate, now I have got the formula, I mean to give it a trial. In saying I have *got* the formula, I might explain that the numbers of the journals last year containing it, by some mischance or another, did not reach me, and although I tried to get them again, I could not fill up the gap, and had to wait until just before I left Ceylon.

I am now in the Himalaya at one end of the Hill Stations, and at the end of the summer I go down into the Plains, so if any useful experience crops up I will communicate with you again, as I find the best way of carrying out Capt. Cuttle's motto, "When found make a note of it," is to send the note to the NEWS, and then it can always be found.

PERSPECTIVE FOR PHOTOGRAPHIC STUDENTS.

BY J. MARTIN.

My last paper referred principally to the horizontal line and point of sight. This latter is, with very rare exceptions, always to be found in the picture, otherwise the artist must have stood on one side of it, and looked askant while working. I remember a portrait by Gainsborough of King George III. having this peculiarity. His Majesty is represented as walking forwards, and thus the artist obliges the observer to stand on one side, and leave room for the king to pass on without obstruction. But a landscape thus painted would appear in false perspective. Neither should the point of sight be placed exactly in the centre, as nothing is more ungraceful than repeated lines on each side of the picture, or to see a long street, road, or an avenue placed directly before you. In fact, photography produces so little difference of tint when representing green, brown, and red colours, that the ground would very probably seem to rise like a wall, rather than recede towards the distance. Supposing the horizontal line to be five feet from the base of the picture, then we divide one of its sides, measuring from its base to the horizontal line, into five divisions, we shall have one foot in each; and continuing to make off such divisions up to the top of the picture, we shall thus be able to estimate the height of every object it contains. Supposing for instance, the top of some picture reaches from the base of the picture to the fifth division, inclusive, above the horizontal line, then that object will be ten feet high; supposing this object to be a wall or shelf, &c., a line drawn towards the point of sight from a perpendicular one, marking its height, will give the upper extremity of such objects in perspective; another line drawn from the base of the upright one will give its lower extremity. Of all objects lower than the high we see the upper surface, and of those higher than the high, we see the under surface; thus we are enabled to judge very nearly of their relative height. As a familiar example of this, we may notice the long rows of shelves, bottles, and drawers of a chemist's shop; as their lines recede towards the point of sight, they appear to approach each other, and the shelves, &c., would seem to be shorter and closer at the farther end than they are close to us. But we know, by experience, that this is not the case. This may be termed a natural or instinctive education of the eye.

When photographic lenses are used which cause these lines to converge too rapidly, then a species of distortion is produced which will not allow objects at various distances to be introduced into the same picture, and a group of figures must be placed, like the jolly hutchers, all of a row. Even a single figure sitting sideways will appear to have one side, hand, and foot much larger than the other; and a hat held a little in front will appear in about the proportion of a washing copper. The lines above spoken of and the point of sight are termed by old authors the *vanish-point* and *vanishing lines*.

SOMETHING ABOUT IODINE IN PHOTOGRAPHIC STUDIOS.

BY K. SCHWIER.*

THE use of iodine is as old as picture-making by the agency of light. Nevertheless, it seems to me that it is not fully appreciated, and I would like to draw the attention of our practical photographers to some of its good qualities. There is no better thing known to me, for instance, to free a cuvette or bottle from old silver residues than the solution of iodine in water and iodide of potassium:

Iodide of potassium	...	...	10 grammes
Iodine	..	...	7½ "
Water	...	...	2½ "

Triturate in a mortar until a brown solution is obtained. We will call this iodine water. To remove silver stains, touch them with this solution, and afterwards dissolve the iodide of silver and free iodine by means of hyposulphate of soda or aqua ammonia.

It is also very useful in strengthening or reducing the intensity of negatives, though a yellowish stain of iodine is often left behind.

When diluted with forty times its bulk of water, it is an excellent thing for cleaning silver prints, dishes, and hands from adhering hypo.

In short, iodine water should be missing in no gallery.

Correspondence.

PHOTOGRAPHY AS A BUSINESS.

SIR,—The article in the current NEWS by Mr. N. H. Busey, from the *Photographic Rays of Light*, is very interesting, but I would like to apply a somewhat similar question—and answer—to a much larger class of men than Mr. Busey was thinking of when he wrote the above article.

Your paper is read extensively among small photographers and assistants, and it is of them I am thinking. It is obvious that we cannot all be upon the top rung of the ladder—certainly not at the same time; and, as a matter of fact, there are very few engaged in photography who make so much money at it that they have to look for other means of investing it. I would ask, why do so few photographic businesses pay, and why do we see so many photographers struggling and hard-up during the slack times? And the answer is, that so many who engage in photography as a business expect too much of it. In years gone by, when there was not nearly so much work in or upon the work as there is now, when there were not so many photographers, and prices were higher for inferior work, a man working single-handed, or nearly so, might make more than a living—perhaps buy the house he had been renting, and one or two more; but in these days it is not so. Supply and demand are matters that will always find their own level; if they do not, trade competition will very soon do so for them.

Small businesses will not pay. The tradesman who commences business—no matter what it is; it may be a small draper or a clothier—with a small capital, and only gets enough call to help himself and perhaps one assistant employed, will tell you that he is only making a living out of it—perhaps not that; but if he is industrious and persevering, in the course of time he may keep half-a-dozen assistants employed; then he may make money; and the more assistants he can keep employed, the more money he will make. Reason why—each of his assistants will earn for him, with the assistance of his capital, a little more than he pays him. Please note that it is not the amount of capital that does it only, but the rapidity with which that capital can be turned over.

* St. Louis Practical Photographer.

It is just the same in photography at the present day. Those who love to call it an art may do so, and I shall not want to quarrel with them about it; but it's a trade for all that, and as a trade it must be regarded by all who wish to make money at it, and they must accept the fact that they cannot get twenty shillings for fifteen shillings' worth; or, if they do, they will not do so long.

Small businesses will not pay. The young operator who jumps into business for himself, thinking that he will surely be able to clear his expenses, and that will be better than working for someone else, is in a fair way to learn something. He means to start in a small way, and do all the work himself, with perhaps an apprentice or two, so as to keep the expenses down as low as possible; but he will probably find that they amount up to £2 or £4 a week. This he has to earn before he has a cent. for himself; he has to earn £6 or £7 a week before he is as well off as he was while he was getting fifty shillings a week wages. As there is a great deal of idle time in wet weather, he will find himself very much overworked in fine weather—and fortunate at that; but if he is energetic and persevering, he may soon find himself able to keep a printer; then his times will be a little easier, and better and better as he can increase the number of his assistants—and for precisely the same reason as I mentioned in the case of the linen draper; but he must still work; he must not fall into the too common error of one man thinking that two or three assistants can keep up a large house and himself, and perhaps family, in idleness or partial idleness.

Many employers do their assistants a great injustice in this respect; they work them long hours, and probably express dissatisfaction with them afterwards. I would like to impress upon them that where the work is mixed, two men, by dividing it into departments, will easily do three times as much as one could when he had to run from one thing to another.

We are hardly called upon to recognize those employers who engage an operator and want him to do a little operating, a little retouching, a little printing, and a little something else, and offer him—well, anything over thirty shillings a week. But, unfortunately, there are a great many of them. The best I can say to them is, that the sooner they give up their businesses—yes, my friends, give them up; don't sell them, because you know very well that the buyer would be the principal article sold—and take situations, the better it will be for the parties concerned.

I shall probably, with your consent, have something more to say at a future time about "Photography as a Business."—Yours respectfully, MASS.

COLOURED MINIATURES ON GLASS.

SIR,—Having seen your article in last week's issue under the above heading, I thought I would address a few lines to you explaining a process that I have been working for the last three years. At about that time an American by the name of Carpenter came round our way and sold my employer (M. Meddington) the right to work this process in Bath. As the whole affair has exploded, there can be no harm in my briefly describing the *modus operandi*, and you will see how nearly we tread upon the patent of Mr. B. T. Irish.

In the first place, we take a rather over-printed picture, tone well, fix as an ordinary print, and wash well; then proceed to mount (face downwards) using a paste composed of two parts starch to one part corn-flour: use a squeegee to ensure complete contact to the glass and to expel any particles of superfluous paste. Care must be taken that the picture, from the moment of printing to the mounting, be kept moist; if allowed to dry, the minute cracks produced in the albumen separate themselves from the glass, and in a very short time give the picture a faded and mildewed appearance.

The mounting having been successfully accomplished, the picture is left to dry, and then plunged into a pan of boiled castor oil, warmed up to within a degree of boiling, and then left the matter of a night to soak. In the morning the picture is taken out, and rubbed clean with a rough cloth, when it will be found to be beautifully transparent, and ready for the backing glass, whereon the colour is put. With vignettes this process answers admirably, giving a softness, and, if the colour is skilfully applied, a richness, that defies description. The colours having been applied (oil colours diluted with turps), the two glasses are then joined together by small slips of gold beaters' skin, enclosed in a brass case backed up with cardboard to fill (the said cases, I believe, were made for the purpose by Messrs. Marion and Co.), and the picture is complete.

At one time I had a lot of thick Saxe paper, and the prints produced by it could not be rendered so clear or transparent as the fine Rive that I had used previously, and then it was that, cudgelling my brains, I fell upon a happy idea. It certainly was not emery paper; but you will find it, I think, cleaner, and, if you try it, far more certain in its results.

My plan was as follows:—I let the picture dry thoroughly, so that the albumen had a sure hold on the glass, then moistened the back with a sponge and clean water; then, taking a soft piece of india-rubber, I removed almost every trace of paper, leaving a beautifully clear picture. This process can easily be accomplished, as, if the mounting be properly done, the albumen adheres to the surface of the glass so tenaciously that it would require a knife to scrape it off.

I have thus briefly described our process, and I think you will find very little difference between it and what Mr. Irish wishes to get letters patent for; for you see that what I have described is really and truly "a process for preparing and producing coloured photographs on glass (face downwards), then grinding it thin at the back, and then treating it with paraffin, or its equivalent, as specified, or the after-reception of oil colours, applied directly to the back of the picture, or to a second glass to be applied as a backing substantially as herein described."—I am, yours respectfully, GEORGE BRADFORD.

DEVELOPING GELATINE PLATES.

SIR,—I am using a collodio-bromide emulsion and rapid dry plates, and I use the following developer:—

Common washing soda	...	...	1 ounce
Bromide of ammonia	...	...	75 grains
Strong liquor ammonia	...	...	$\frac{1}{4}$ ounce
Water	...	...	10 ounces

For half-plates I take about half-an-ounce of the above developer, and after flowing it over the plate a few times, I add pyro acid dry—about the size of a pea—and stir into the developer. With correct exposure I get excellent negatives; but if the plate should get a little over or under-exposed, I fail to get anything like a presentable picture, on account of not knowing the best method of modifying the above developer, the usual bug-bear—fog—making its appearance.

Perhaps you will kindly suggest through the PHOTOGRAPHIC NEWS a method of modifying the above developer to suit a plate either a little over or under-exposed. In most all other alkaline developers one generally sees the alkaline developer modified to suit a plate that should be over or under-exposed. Your kind suggestion would probably save me a lot of trouble and expense experimenting. I thought of making up three developers—strong, medium, and weak.

<i>Strong.</i>			
Bromide ammonia	...	...	50 grains
Liquor ammonia	...	...	$\frac{1}{4}$ ounce
Soda water	...	...	10 ounces

<i>Medium.</i>			
Bromide ammonia	...	...	75 grains
Liquor ammonia	...	...	$\frac{1}{4}$ ounce
Soda water	...	...	10 ounces
<i>Weak.</i>			
Bromide ammonia	...	...	96 grains
Strong liquor ammonia	...	...	$\frac{1}{4}$ ounce
Soda water	...	...	10 ounces

Commencing with the medium developer, and if found over-exposed, wash off at once, and commence again with the weak; and if under-exposed, wash off, and commence afresh with the strong developer. Would you recommend the above method? Would the light at twelve o'clock at night (this time of the year), passing through a crack in a door, fog a sensitive dry plate?—Yours respectfully, AN AMATEUR.

[It is probable that the proposed plan may be found of service. Perhaps some of our readers, fully experienced in developing rapid plates, may be able to give our correspondent a hint.—ED.]

INTENSIFYING GELATINE PLATES.

SIR,—Let those who use the alkaline pyro-developer for dry gelatine plates, and wish for more density, use bichloride of mercury, and they will be able to get what amount of density they please; afterwards flood with ammonia, which will alter the colour of the film to much the same as if developed with the oxalate of iron.

The only fault I find with it is that it has the effect of hardening the high lights; this would, I think, be an advantage to those gentlemen who find a want of crispness and brilliancy in the high lights of a fully exposed landscape negative.

I have not tried this intensifier on landscape negatives, as up to the present my experiment with gelatine plates (which, I might mention, are Swan's) has been principally in the studio; but I intend trying what I can do with landscapes with them before the summer is over; in the mean time I should be glad to hear the opinion of a few of the gentlemen who do work gelatine plates on this intensifier.—Yours truly, W. J. HUNTER.

EXTRA MEETINGS OF SOUTH LONDON MEMBERS.

DEAR SIR,—In answer to the letter from the Secretary of the South London Photographic Society in your last number, I feel called upon to offer some explanations with regard to certain notices which have appeared in the photographic journals respecting the auxiliary meetings which have been held at my studio, 4, Tottenham Court Road.

If you will kindly refer to my letter of June 13, you will find that therein I simply offer my rooms for conversational meetings of the members of the S. L. P. S. during the recess of that Society, the between dates of which were known to all interested or connected with it; and in justice to me, I think you must admit that it was more in consequence of the editorial construction put upon my offer, than any statement of mine, that anyone would be led to suppose the meetings were to be of an official character. I would not have taken that liberty with the Society without first consulting the Managing Committee, and every right thinking man must confess that it would, to say the least of it, be extremely impolitic to allow the credit of the Society to be placed at the call of an individual member.

With all respect, then, to persons and position, the Committee of the South London Photographic Society must please to accept my apologies for any fancied slight or irregularity which I may have committed, and in continuing to throw open my rooms for the use of members of the Society on Wednesday evenings I do so with the sole object of affording my friends and professional brethren the opportunity of meeting each other for conversation and comparing notes on various subjects in connection with our art.

Certain statements have reached me to the effect that I have some commercial or personal object in view. I think I may, however, safely leave the refutation of such calumny in the hands of those gentlemen who have been present, and, in conclusion, say that the success which has attended my humble efforts, and the pleasure I have had in meeting my confrères, more than repay me for the small amount of trouble it has given me.—Your obedient servant,

ARTHUR BRITTLEBANK.

PS.—The meetings will in future be known as *Photographic Conversazioni*.

[If some of the South London members desire to have additional meetings for discussing photography, and Mr. Brittlebank choose to lend his studio for such meetings, we cannot see any legitimate ground of objection on the part of any one. Possibly it was well that it should be understood that such meetings were outside of the Society's sanction or control.—Ed.]

Proceedings of Societies.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of this Society was held on the 1st inst., the Right Hon. The Lord de Ros in the chair, which was, however, occupied during the latter part of the meeting by the Right Hon. the EARL OF ROSSE.

The minutes of the last meeting having been read and confirmed, the following members were elected:—J. L. Ranking, Esq.; George Brook, Esq., Jun.; F. H. Shaw, Esq.; Alfred Wilcox, Esq.; A. Hunter, Esq., M.D., F.R.S.; Rev. G. P. de Putron; and W. Stewart, Esq.

In consequence of the death of Mr. Sopwith, who had filled the office of referee in conjunction with Mr. Glaisher for many years, Mr. W. H. Howard was elected to fill that office, and Captain J. C. Lewis, M.A., Governor of H.M.'s Prison, Pentonville, was elected a member of the council.

The SECRETARY then laid before the meeting the pictures for the current year, and Mr. GLAISHER then read his report, of which the following is an abstract:—

Class 1 contains 111 pictures, contributed as follows:—R. O. Milne, Esq., 20; W. S. Hobson, Esq., 11; R. Murray, Esq., 9; E. Swinburne, Esq., 9; F. Beasley, Esq., 8; J. W. Leigh, Esq., 8; G. G. B. Creswell, Esq., 7; J. W. Richardson, Esq., 5; T. R. Shervington, Esq., 5; Rev. W. Hancock, 5; T. Brownrigg, Esq., 4; The Marchioness of Anglesey, 3; R. Leventhorpe, Esq., 3; J. L. Ranking, Esq., 2; Captain J. B. C. Fox, 2; Major Chadwick, 2; Rev. H. Palmer, 2; W. Vanner, Esq., 2; W. Armstrong, Esq., 1; W. Muller, Esq., 1; A. Watkins, Esq., 1; and J. H. Ritchie, Esq., 1.

Class 2 contains 119 pictures contributed as follows:—R. O. Milne, Esq., 14; Rev. W. Hancock, 13; F. Beasley, Esq., 9; T. R. Shervington, Esq., 8; E. Swinburne, Esq., 8; W. S. Hobson, Esq., 7; Rev. H. Palmer, 5; A. Watkins, Esq., 5; Capt. J. B. C. Fox, 4; W. Vanner, Esq., 4; Major Chadwick, 4; G. G. B. Creswell, Esq., 4; The Right Hon. the Lord de Ros, 3; R. Murray, Esq., 3; W. E. Gihh, Esq., 3; C. Stebbens, Esq., 2; J. H. Ritchie, Esq., 2; Major Heine, 2; W. Armstrong, Esq., 2; W. Muller, Esq., 2; Mrs. Deehle, 2; R. Leventhorpe, Esq., 2; R. O. Yearsley, Esq., 2; J. L. Ranking, Esq., 2; J. W. Richardson, Esq., 1; Mrs. Gulston, 1; J. W. Leigh, Esq., 1; P. B. Bury, Esq., 1; and F. Whitmore, Esq., 1.

Class 3 contains 95 pictures contributed as follows:—Rev. W. Hancock, 14; C. Stephens, Esq., 12; J. L. Ranking, Esq., 7; Rev. H. Palmer, 6; W. Muller, Esq., 6; Major Chadwick, 6; W. Armstrong, Esq., 5; Mrs. Deehle, 5; R. O. Milne, Esq., 4; P. B. Bury, Esq., 4; F. Beasley, Esq., 3; Mrs. Gulston, 3; W. Vanner, Esq., 3; A. Watkins, Esq., 3; The Marchioness of Anglesey, 2; Major Heine, 2; F. Whitmore, Esq., 2; The Right Hon. the Lord de Ros, 1; W. S. Hobson, Esq., 1; P. Gunyon, Esq., 1; Miss Cox, 1; R. Leventhorpe, Esq., 1; E. Swinburne, Esq., 1; J. W. Young, Esq., 1, and G. G. B. Creswell, Esq., 1.

The remainder of the pictures are comprised in Classes 4, 5, and 6.

Mr. GLAISHER remarked that it was most gratifying to find

the pictures for this year were not only much more numerous, but also far superior in quality to those of the past year.

Thus class 1 for last year contained 73 pictures, whilst class 1 for this year contains 111 pictures; class 2 for last year contained 94 pictures, and class 2 for this year contains 119 pictures.

The following prizes were then awarded: To R. O. Milne, Esq., for pictures 141 and 109, first prize, a large silver goblet; W. S. Hobson, Esq., for pictures 174, 175, and 180, second prize, a silver goblet; J. W. Leigh, Esq., for picture 37, an oil painting in gilt frame; R. Murray, Esq., for pictures 131 and 140, a silver goblet; F. Beasley, Esq., for pictures 302 and 303, a graphoscope; T. Brownrigg, Esq., for pictures 42 and 46, a graphoscope; J. W. Richardson, Esq., for picture 5, an oil painting in gilt frame; G. G. B. Creswell, Esq., for picture 6, an oil painting in gilt frame; R. O. Milne, Esq., for pictures 110 and 112, a graphoscope; E. Swinburne, Esq., for pictures 15 and 20, an oil painting in gilt frame; R. Leventhorpe, Esq., for pictures 8 and 9, an oil painting in gilt frame; the Marchioness of Anglesey, for picture 21, an album elegantly bound in morocco; T. R. Shervington, Esq., for pictures 26 and 27, an album elegantly bound in morocco; the Rev. W. Hancock, for picture 23, an album elegantly bound in morocco.

Certificates of honourable mention were awarded to Captain J. B. C. Fox, W. Muller, Esq., A. Watkins, Esq., W. Armstrong, Esq., and Major Chadwick.

ARTHUR J. MELHUISE, Hon. Sec.

MANCHESTER PHOTOGRAPHIC SOCIETY.

It was arranged that Saturday last, the 5th instant, should inaugurate the first out-door meeting of this Society (this season) in conjunction with the members of the Liverpool Amateur Photographic Association, at Miller's Dale, Derbyshire.

It was noticeable that none of those gentlemen (save the Secretary) who had the making of all arrangements as to time and place of meeting were present, but several others assembled, who, together with a few friends, mustered in all a party of fifteen.

Arriving at Marple, the station at which the Liverpool friends were to join company, great surprise was felt not to find any of them there; but on reaching Miller's Dale Station, the trail of two gentlemen from Liverpool was struck by accident, and they expressed agreeable surprise upon seeing the Manchester friends, believing the trip had been adjourned or abandoned. They explained that on the announcement of the meeting by the Secretary, they decided to be present; but a few days ago were informed that the meeting, as arranged, would not take place, and were told that no Manchester gentlemen were going: their presence there and then was attributable to an independent line of action with a view to spend the latter of the week in Derbyshire. They expressed much chagrin at having been misinformed, as many members of the Society had quite decided to attend, and would have been glad of the opportunity of an interchange of ideas and the pleasurable company of their Manchester friends. There could be no doubt their informant gathered his intelligence from somebody who had disseminated the rumour without authority, and so misled the members.

Despite every vexatious incident in connection with such a misunderstanding, the day was on the whole auspicious. Starting fairly, with the exception of a little wind, it proved a splendid photographic day.

Consequent upon the late heavy downfalls the roads were a little damp. But this and many dispiriting thoughts soon gave place to many agreeable incidents found in each other's company. After Miller's Dale had left its picturesque impressions upon upwards of twenty gelatine and other plates, the party had recourse to cheese plates and sandwiches. Soon afterwards a few more Manchester friends arrived (having come by a later train), when all set out to walk through Chee Dale, passing *en route* Chee-Tor and by Ashwood Dale to Buxton; and notwithstanding the Derbyshire miles were thought to be very much longer than Lancashire ones, the walk was spirit-stirring and enjoyable, being interspersed with incidents very pleasant and amusing in many ways. Having reached the Shakespear Hotel, speedy preparations were set on foot for a good substantial tea, all feeling in trim to do ample justice to excellent viands, and rising from the convivial board positively amazed at the wonders they had done under the invigorating air of those Derbyshire hills and dales.

Cameras of sizes varying from three inches square to 12 by 10,

and from one to 33 pounds in weight, were in the field; and plates of five different descriptions, fifty-seven of which were exposed, in addition to several excellent hand-sketches by one of the gentlemen present. Thus was brought to a close this field-day, an interesting day in the memory of those who had the enjoyment of each other's agreeable company, and who separated with the wish that it might be succeeded by many friendly and photographic gatherings.

Talk in the Studio.

THE MIRAGE.—The *Family Herald*, alluding to the Tenby mirage photograph, the particulars of which have appeared in our columns, says:—"It is an undoubted scientific fact, that, where there happens, from any meteorological cause, to be a stratum of atmosphere of considerably higher power than that immediately below it, the upper stratum acts as a kind of mirror, and may reflect objects at a very considerable distance. The most extraordinary instance of this phenomenon is the well-known case of Captain Scoresby, who, whilst engaged in the whale fishery, observed the distinct effigy of his father's ship suspended in the air, and thus ascertained the fact, of which he had been previously unaware, that his father was in the same quarter of the globe as himself. The vessel turned out to have been thirty miles distant when its refracted image was seen. In the hot countries of the South and East the mirage is frequently seen, and in the Straits of Messina it has acquired the name of the 'Fata Morgana,' from the ancient superstition of its fairy origin."

GELATINE has a peculiar action on gum; if gum be added to gelatine, and the mixture sensitized with ammoniacal potassium bichromate, the behaviour of the latter substance is very little altered by the addition of the former. Its solubility in hot water is somewhat increased, and to obtain the same degree of insolubility for the image as with pure gelatine the exposure must be longer. But if the mixture be acidulated with acetic acid, the film after exposure and desiccation is less soluble than one consisting of chromated gelatine only with acetic acid. Gum therefore renders an acid solution of gelatine less soluble, and the reason for this is believed to be that gluten and arabic acid form a compound solid only with difficulty. Barax thickens a gelatine solution, and the alkaline reaction of the same substance tends to render the chromated gelatine more insoluble. Calcium nitrate gives to gum an enormous power of adhesiveness.

PHOTOGRAPHIC RIFLE.—M. Marey having expressed a wish for the invention of the photographic rifle which could take instantaneous views of birds in their flight, Captain Eugene Vassel proposes a small dark rifle chamber of 35 millimetres (2.7 in.) interior diameter, surmounted by a proper level and sight. By means of Muybridge's, Janssen's, or other contrivances for taking instantaneous pictures, he thinks that small views might be easily taken which could be subsequently enlarged. He also proposes a photographic revolver for taking a series of successive attitudes at a single operation.—*La Nature*.

To Correspondents.

P.—We have no personal knowledge whatever of the project you mention, and hence have no means of knowing anything of its trustworthiness, either for investment or other business relations.

G. R. E.—The mottled effect of the piece of exposed paper you send is due to the use of a weak silver solution. Possibly the stock of solution was strong enough, but the appearance of the paper suggests that you have poured out a small quantity into a shallow dish, and sensitized several sheets of paper without replenishing; hence the solution has become weak by the abstraction of silver. It is desirable, after exciting several sheets, even on a large quantity of solution, to agitate the solution a little, otherwise the upper stratum of solution becomes weaker than that underneath, by abstraction of silver by the paper. It is wise to have the solution about an inch deep in the dish, at least.

OPERATOR.—Many operators undertake to retouch, but in large establishments it is generally considered an artist's duty. (2). Lead pencil is now in very general use for retouching, and gives generally the most delicate results.

R. M. L.—India-rubber is not a trustworthy mounting material. In the course of time it loses its adhesive property, and becomes a dirty looking resinous powder covering the back of the print, which leaves its mount. We should not use it even for placing prints in a scrap-book. A mounting material made by dissolving gelatine in spirit answers best for that purpose. The gelatine is first soaked in cold water, and then drained. It is then melted in a jacketed pan by the aid of heat, and methylated spirit is stirred slowly into it, a little at a time. We cannot tell you the precise proportions. It becomes fluid enough to use when very slightly warmed, and answers very well for the purpose.

F. W.—The original sizes of photographs were doubtless fixed to meet some mechanical convenience, possibly the covering powers of some existing lenses. At any rate, they were arbitrary. There is no good reason for adhering to them where they can be varied with advantage. Very often the proportions and composition of a landscape can be greatly improved by cutting a portion of the regulation size away, and in such case we should decidedly recommend it to be done.

X. Y. Z.—You have undoubtedly no right to exhibit publicly a portrait of one of your sitters against his expressed wish, and as a matter of business prudence it is very unwise to do so. Of course, when you have produced a choice picture, there is a temptation to show your best work; but you had better sacrifice your wish in this matter than quarrel with a customer on such a point in which you would be wrong.

W. M.—The iodides and bromides should be dissolved in alcohol before adding to the collodion. They will not readily dissolve in the collodion itself. Sometimes it is necessary to grind them in a Wedgwood ware mortar with alcohol to get them into solution. The potassium salts are not readily soluble. Cadmium salts are most convenient in this respect.

L. G. KLEFFEL.—So far as we remember, Dr. Moitessier's process was first communicated in brief to the French Photographic Society. It was subsequently published in detail in a pamphlet on micro-photographie, issued in Paris. Whether the pamphlet is now procurable or not, we cannot say. In our tenth volume (1866), on page 316, is a full notice of the matter. We will hand your new address to our publisher.

H. WALTER.—If you have a method of transferring the image to wood for engraving, better than using an image in fatty ink, we shall have pleasure in publishing it; or if you wish to sell the instructions, your announcement should appear in our advertising pages.

W. M. L.—We have no personal knowledge, not having made trial. As a rule, apparatus of all work has a tendency to do all the work promised, indifferently.

J. F. FULLER.—Many thanks. We have seen the instrument, and shall have something to say in our next.

J. FRANCIS.—We called at Red Lion Square, and saw your invention, and shall notice it shortly.

PYRO.—Your failure may arise from various causes, but from a description only we cannot form any precise opinion. It is possible that the silver solution may have got out of order. It is possible that you under-expose; it is possible that some actinic light finds admission into the dark room.

J. O. S.—It is evident that your bath has got out of order, but how we cannot tell you, as we, of course, have not had it under supervision. If the case were ours, we should simply make a new one at once, and, at leisure, convert the old one into silver. 2. The altered working of your toning bath suggests some impurities in the chemicals, in which case try fresh samples, or another formula for a change. But remember, slow toning is generally better than quick toning.

R. SYMONS.—You cannot get any copyright sanction for America, as no International copyright law exists between that country and Great Britain. The Fine Art Copyright Act only protects you in the United Kingdom, and beyond you have no protection.

Several correspondents in our next.

PATENTS.

COMPILED BY MR. F. DES VCEUX,

Patent, Trade Marks, and Photograph Copyright Agent, 32, Southampton Buildings, Chancery Lane, London.

No. 2555. JAMES FRANCIS, of Rochford, in the County of Essex. "A new photochromoscope apparatus." Dated 25 June, 1879.

No. 2563. HERBERT JOHN HADDON, of 67, Strand, Westminster, Civil Engineers. "Improvements in photography." A communication to him from abroad by David Nunes Carvalho and Ernest Marx, both of New York City, United States of America. Dated 26 June, 1879.

No. 2611. ALEXANDER BORDLAND, of Stockport, in the county of Chester, "A new printing process to be called 'Photographint.'" Dated 28th June 1879.

The Photographic News, July 18, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

SUCCESSFUL PHOTOGRAPHERS IN ART AND IN BUSINESS.

WE take the first opportunity of commenting upon Mr. J. S. Tulley's letter in these columns a fortnight since, because it raises several points of interest which many would be glad to see discussed in wider terms. Whether our readers agree or not with Mr. Tulley's remarks, there cannot be a doubt about the frankness with which he writes; and although on reflection, possibly, he might have modified some of the views expressed, it is well at times that we should have a strongly pronounced opinion, even if it does not entirely coincide with our own. Mr. Tulley cannot be accused of beating about the bush; he has made up his mind about a subject, and has the courage to put forward his views without reference to the opinion of any one else. The points Mr. Tulley raises are well worth the notice of Photographic Societies, and if his letter has the effect of calling attention to some weak points in their mode of conducting business, the writer will probably be more than satisfied. We do not agree with what Mr. Tulley has written for the most part, nor do we think that Mr. Tulley ever expected that we should. That sound improvements and new processes of value can be brought forward at every meeting Mr. Tulley knows to be impossible, as much as we do; but he is ready to admit that "now and then something good is given by some persevering amateur who has both time and money at command." Not only this, but we should remember that, at any rate so far as the Parent Society is concerned, the greater portion of members are amateurs, or gentlemen, at least, who do not profit in a pecuniary sense from their photographic work. Professional photographers form but a small proportion of the members of the Photographic Society, while if it were only the exhibitions alone that this Society fosters, the benefits conferred would be great. But Mr. Tulley admits this, for after his sweeping condemnations, he says: "One Society, the parent one, is quite sufficient." In 1877, one of the most successful Exhibitions held in Pall Mall, the number of visitors who actually paid for admission amounted to 4,500, while some other 2,500 were admitted as members and friends. Thus we have an outside public of between four and five thousand persons made acquainted with the progress of photography—a point of importance that Mr. Tulley himself would doubtless be the first to admit. But, says Mr. Tulley, "no men of any particular standing ever come to the Society and say what they find out, by which they make their pictures and their fortunes by business." Mr. Tulley, in a word, wishes that any of his professional brethren—who, after all, make up but a small section of the members—that have been fortunate in business shall come to the Society and say how money is to be made. We remember a similar plaint made ten or a dozen years ago. We were dining at the Solar Club, and the conversation turned upon making money by photography. Our neighbour, like Mr. Tulley, wished some of the more successful members would enlighten their brethren on the subject of making money by photography, for he very much doubted if there was anyone at that time of speaking who had made ten thousand pounds in his studio. This conversation we repeated a day or two afterwards to a mutual friend, who told us that he could have put his finger upon one of the company, certainly, who had made that amount, and the person in question was no other than our friend at dinner. Now, shall we turn round and put our finger on Mr. Tulley? We rather suspect he has been a successful man of business, and could give useful hints on the subject of money-making. The only question is, whether, after all, we are not confounding two matters: good photography and good business qualities. The best photographer, if he is not

something of a man of business, will never make money; but it is with photography, and photography alone, that photographic societies have to do. We do not think there are two opinions as to the most artistic photographer in this country of recent years. The late Mr. O. G. Rejlander stood so pre-eminent in the photographic world, that his position has never been disputed. But he lived and died a poor man. We remember a quaint little speech he made on the subject of getting money. He advised his hearers to take up the glazed carte, or cabinet, after it had been elaborately retouched, to mount it on a cream-coloured card with a red border, and finish it as you see those elegant beauties upon a French plum-box. That is the way to make money; "but," said he, "it is not art." We do not tell our readers to follow Mr. Rejlander's advice; some of us are not artists enough to become his disciples in art-matters; some prefer to make money, and do so. The public in general will be found to care more for "plum-box" portraits than for any other, and it would be foolish, indeed, were photographers not to supply people with what they desire. But this did not concern Mr. Rejlander. He would have been glad enough, doubtless, could he have made money, but he lived very contentedly, nevertheless. Many will remember his picture of "Homeless," a boy asleep in rags and tatters on a door step, a picture which has been pirated by a dozen illustrated journals. Rejlander probably did not make forty shillings out of his work; but it is, nevertheless, one of the most successful photographs on record. His attention was called to the "sitter" by a policeman who was endeavouring to make the boy move on. "I said, there, bobby, put this namesake of yours into your pocket, and I'll see after the boy," was Rejlander's quaint account of the affair, and before he woke the boy, he had sketched the pose on a brown paper parcel he was carrying. But Rejlander, as we have said, would have been the last person to instruct one in business matters connected with photography. He accomplished very beautiful work, but was ignorant to the last degree in securing a sale for it. He had no idea of the value of time from a business point of view. He was mounting a print one day, awkwardly enough, no doubt, and required a pair of scissors to trim the photograph. He sent a little girl for the scissors, and idled away the time as he best could. But the messenger never came back. He waited and waited, until at last he grew impatient, and went out of doors to discover the cause of delay. It was a narrow court in Wolverhampton, black and grimy, and shut in on all sides by sooty chimney pots. But a sun-beam had somehow lost its way, and got into the court, and when he looked out, there was his little fair-haired messenger standing on tip-toe, scissors in hand, and attempting to cut this sunbeam with her scissors, while she shaded the rosy light from her eyes with the other tiny hand. Rejlander spent much time in attempting to realize the picture afterwards by photography, but he frankly avowed to a painter subsequently that this was impossible, and that only upon canvas could the scene be reproduced. So that he lost his labour and his time in this case in fruitless exertions—another instance of unbusinesslike proceeding. But we doubt whether the experiences of successful men of business, if they would give them, would be so interesting, or even instructive, as those which the late Mr. Rejlander was wont to impart, while they would, as we said before, scarcely come within the scope of photographic societies.

ART IN PHOTOGRAPHY.

BY PAUL BROWN.*

IN response to a suggestion made by some of my photographic friends, I have prepared a paper on a subject which has been of vital importance to the artist. Beginning with his

* Communicated to the Chicago Photographic Association.

earliest attempts, the necessity of a proper support to his crude figures early presented itself, whether it be the undefined mistiness of an atmosphere, or a well-defined landscape, or the interior of a palace, a wood, or a hut. He early learned that the masses of light and shade must be so arranged as to properly support, and thereby enhance, the value of the subject. My earliest recollections of art are intimately associated with the wonderful process of portraying nature by means of the sun-picture, and I well remember the many ingenious devices resorted to, to produce the desired aerial background effect. Among the most remarkable, I mention one composed of a series of gauze screens set a few inches apart. This, however, did not produce a perfect atmosphere. The screens were next suspended and made to oscillate in alternate directions with each other. If my memory serves me, this nearly produced the desired effect, but was attended with disastrous consequences, inasmuch as the novelty frequently attracted the attention of the sitter, thereby spoiling the picture, which in the old Daguerreotype times was no trifling matter, as some of you, I doubt not, well remember. It was soon found that certain coloured coarse fabrics would produce the much-desired soft and delicate shade for the support of the figure, and at first were draped, but soon the flat surface took its place, hence the "plain ground," which soon became the accepted and only ground in general use for a number of years, the tint or particular shade of the ground always being in accord with the taste or peculiar idea of the artist which set it up. Scenic backgrounds began early in the history of photo-portraiture to attract the attention of the leading photographers in the East. As early as 1856, or about that time, an illustrated edition of Shakespeare was published in New York, embellished with the portraits, in character costumes, of the then living celebrities of the dramatic profession. About that time there arrived in New York, from Germany, a Mr. Henry Ulke, an artist who had made the improvement of the photo-portrait by means of retouching with india-ink his special study. This made him eminently the proper person to prepare those photographs for the engraver, and having been employed for that reason and purpose, not only refined the figure, but surrounded it with appropriate scenery, thereby making it doubly attractive. This suggested to the leading photographers a new industry, and one that must be employed and inseparably attached to the new art. Accordingly Mr. Fredericks, one of the foremost of the profession, secured the services of Mr. Ulke, at a salary of \$3,000 per annum, an amount which, at that time, and for that purpose, was of such magnitude as to call not only the attention of the fraternity to his establishment, but of the entire country who had interested themselves in the new art. Then Mr. Sarony, at that time a young man, and an accomplished lithographic draughtsman, turned his attention to this new department in art; with what success you all know. He is not only eminent as an artist, but has been awarded with a fair share of this world's goods. The embellishment of his photo-portraits are, in my estimation, amongst the very best ever produced. By this time, what was first looked upon as a novelty, had now become a necessity, so much so, that no first-class establishment could well hold its place without the assistance of a cultivated hand to soften, with ink, the harsh and angular lines of the photograph, and embellish the background with an appropriate design. Thus, by this new art, a fascinating and lucrative employment had been created, which for twenty years has been enjoyed by thousands of our art-inspired young men and women, and, for aught we can foresee, will continue for years beyond our wisdom to limit. In an interview with Mr. David Strong, a popular scenic artist of thirty years' experience, I learn that soon after Mr. Ulke's engagement with Mr. Fredericks he began to be called upon to paint scenic backgrounds by the photographers through the various towns of New England, where his engagements called him. But, as it was not a legitimate business with him, Mr. Strong waives all claim to being first in introducing the scenic background as now used, but gene-

rously awards to Mr. Ashe and his associates the honour of first making scenic backgrounds a special business, and largely introducing them to the fraternity as an acceptable accessory, through his agents, the Messrs. Anthony, of New York. Thus far, with all his success, Mr. Ashe has only for a more enterprising honour to sow and reap. To L. W. Seavey undoubtedly belongs the honour of successfully introducing and making the scenic background an indispensable accompaniment to any well-equipped gallery. His grounds combine the colour and touch that make them prominently without a rival. To him also belongs the honour of making it possible to introduce into the photograph accessories of every description necessary to complete a composition of almost any character, by actually manufacturing the reality of a light and durable material, which admits of easy and safe transportation and long use without injury. His is familiar to all; his reputation is not alone national, but world-wide. When the new and wonderful discovery was first proclaimed that a perfect picture could be produced by the action of sunlight on certain chemicals, it was predicted that the occupation of the miniature and portrait artist was gone. Time has not verified the prediction; on the contrary, it has been to them of the greatest assistance. It has made it possible for thousands to engage in and pursue the art of portraiture who, without its aid, would not have tried the venture. The fact soon developed itself that none but men of æsthetic tastes could successfully manipulate this new art. What has, or may be said to the contrary, it has been and is one of the greatest educators of the age we live in, and is nobly fulfilling its mission. In conclusion, allow me to add, this beautiful and scientific art has attained giant proportions. Among its votaries are numbered many of the ablest men of the world. To the amateur it is the most fascinating of the arts. Governments have captured it to mark the detailed progress in their internal improvements. It has become an indispensable ally of the astronomer and scientist. Its scope and use are too great to mention in a short paper like this. From its necessities have sprung a vast number of individual industries, and, with few exceptions, entirely unknown before its advent. If we are to judge its future by the past, we may safely say it is yet in its infancy. None are wise enough to determine the limit. These facts alone should be sufficient to inspire each of us to continue the reach for the highest possible excellence."

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

HARTMANN'S LECTURE 'ON ANATOMY FOR PHOTOGRAPHERS—DRY PLATES FOR DIAPPOSITIVES AND ENLARGEMENTS—GELATINE-EMULSION PLATES AND AMATEUR PHOTOGRAPHY—HOLTERMANN'S MAMMOTH NEGATIVE—PAPER NEGATIVES—FLUORIC ACID FOR CLEANING PLATES—SENSITIVENESS OF FLUORIDE OF SILVER—REPRODUCTION OF OIL PAINTINGS.

IN one of the last meetings of the *Verein zur Foerderung der Photographie*, Mr. Hartmann offered some interesting remarks upon anatomy. "Anatomy!" you will no doubt ask; "what has anatomy to do with out art?" It almost appears as if too much is expected now-a-days of the photographer—chemistry, optics, picturesque arrangement, posing, lighting; he is supposed to have a knowledge of painting, and now he is wanted to study anatomy. No doubt, many an over-burdened photographer, who sighed in this strain before hearing Mr. Hartmann's comments upon anatomy, changed his tune afterwards, for he learned that the construction of the human head cannot be understood without anatomical knowledge, and that only by acquiring some knowledge of anatomy he is enabled to avoid the many unpardonable and ridiculous mistakes which are now made in retouching. Mr. Hart-

* *The Philadelphia Photographer.*

mann gave the following amusing illustration of his remarks:—

"Some time ago, in conversation, a sculptor mentioned to me that he had been engaged to make the bust of a deceased person, of whom several good photographs were placed in his hands, to guide him in his work—a task which any first-class sculptor can well accomplish. There was one drawback, however, for the predicate 'good' could not stand in an artistic point of view, but was only accorded by the modern judgment of the public. The photographs in question were clean, sharp, glossy, and duly retouched, had been worked in the cameo-press—in one word, were excellent pictures, in the opinion of the public; in any case, they were idealized and flattered. The task of making a bust after them was, apparently, a thankless one. The sculptor, however, had some dim recollections left from his anatomical studies, which pointed strongly to the assumption that the human head contained some bones. But, according to the picture, the head of the deceased person had none at all. The forehead looked like a smooth billiard-ball, round, without any disturbing details, no prominent parts, plain surfaces, &c., and it was impossible to determine whether it represented a 'short head,' an angular forehead, one with concave or convex eyebrows. Was the forehead furrowed with strong or weak muscles, and were they bedded in fat, or were they lean? No answer to be got from the photograph! Were there any wrinkles on the base of the nose? Were the wrinkles of the apparently old head horizontal? Did they follow the form of the muscles and their movements, or did they cross them? No answer! Everything smooth, very clean, very prettily retouched and hot-pressed—the modern photography has surpassed itself; bones, muscle, and skin had disappeared, and only a beautiful, clean, and smooth tone had remained, from which the sculptor could make twenty-five foreheads, if needs be, with the slight exception only of the old, real, individual, and characteristic one.

"The nose, also, was spoiled through injudicious illumination. The eyes, which in reality had, perhaps, through age, become somewhat soft and diffused, appeared on the picture with sharply defined pupils, and, too, more boldly than happily-placed high-lights. The deep-set eyes, which probably could not have shown any high-light, appeared, therefore, bloated and swelled out like those of a lobster. The wrinkles near the mouth, the barrenness of the chin, even the characteristic expression around the corners of the mouth, had disappeared to the last trace.

"In spite of these deficiencies, there existed a certain resemblance to the original, as, of course, the contours of the head, and the settled relations of the whole, could not be retouched away, although the smooth, youthful skin on a relatively old head looked queer enough.

"Now, had the retoucher of that picture had even some slight inkling only of the construction of the human head, he would not have fallen into the grave error of making certain parts of the head disappear which are indispensably necessary to a man of life and blood. Or is it pardonable to round by retouching a forehead which is bulky and square? and are traits of the features which have been formed by the life-long influence of the character, and the sublying muscles, to be thoughtlessly retouched away, in order to make the picture appear smooth and clear? The picture can be cleaned in spite of these necessary little details, which impart life to a head, and all that is necessary in this respect is not to destroy the anatomically-correct aspect of the head."

The carbon printing process, the general introduction of which seemed to be pretty well assured two years ago, is now, after having been tested by almost every practical photographer of note, very seldom used except for the production of larger pictures, especially for those of life-size, for which latter purpose it is extensively employed. Many photographers print from their negatives

transparent diapositives in carbon, from which they obtain in the camera an enlarged collodion negative, and from which, again, they print in the usual manner mostly in silver, and only seldom in carbon. The employment of the carbon process is therefore narrowed down very much, and it seems that recently another rival of it has come into the field.

The advantages of the carbon process for the production of the diapositives lie mainly in the wonderful rendition of the half-tones, which were never obtained with such an excellent success with the customary collodion process, or with the chloride of silver collodion. Recently, however, Mr. Wilde, a well-known dry-plate man, placed some dry plates in the market, which in the printing-frame lighted under the negative, produced directly, without developing, the picture far surpassing in brilliancy the most beautiful carbon transparent positives.

The carbon prints show, not unfrequently, some grain, while the new plates never show the slightest trace of that defect. They are so soft and beautiful that a picture enlarged from them cannot be distinguished at all from one taken direct from the subject. It is to be regretted that Mr. Wilde has not yet published the receipt for the production of his plates. He asserts that he uses collodion and gelatine emulsion, mixed together, which declaration sounds somewhat mystic. More about this in my next letter.

The science of optics makes, no doubt, fair progress, but it will hardly make such colossal strides in rapidity as the gelatine emulsion plates made lately. Of late the feverish excitement in regard to those plates has quieted down somewhat, as with the warmer season some difficulties arose, which have to be overcome yet, and I do not doubt that this can be done, as Colonel Dawson, in India, produced in 90° F., with success, gelatine plates, according to the report of the PHOTOGRAPHIC NEWS; and I do not see why this could not be done also here and in America. The gelatine plates in the market have given a new impetus to amateur photographing, and oftener than heretofore amateurs are met now at desirable points of view.

A very clever amateur here, Mr. Wight, explained to me the other day that he manages to get along in his travels without a dark-room, by simply using a clothes-closet, as it is found in every room of the hotels in Europe; but whether the landlords liked this novel use of the closets he did not state, and I doubt if they were over pleased with it. In Switzerland, at one time, landlords only reluctantly took photographers into their hotels, because, they asserted, the chemical preparations were very injurious to the room and furniture.

You will remember the colossal panorama of Linden, taken by Mr. Holtermann, and which was on exhibition in Philadelphia. The same, thirty-two feet long, is now in Berlin, and has caused a great sensation here. Of equal interest is the enormous negative plate (probably the largest negative in the world), which was taken by Mr. Holtermann. It is 5 by 3 feet, and a copy of it was also in Philadelphia. I saw the original negative at Mr. Holtermann's place myself, when I had the pleasure to meet the gentleman at San Francisco. He brought it over with him to Hamburg, where he was born, and later on to Berlin, when he placed it, to my great pleasure, at my disposal, as he did not want to take it back with him to Australia. It represents part of the city of Sidney; and in regard to clearness and purity, the plate is very fair and satisfactory, which is the more remarkable, as Mr. Holtermann is also only an amateur; and hardly any other amateur will dare trying his skill on such an enormous plate.

As you well know, Mr. Warnerke, in England, has tried to supplant glass as a sub-layer for dry plates, with paper, and similar experiments have been made by a Mr. Sandtner, of Teschen, who uses paper instead of glass in the wet process. The samples of his process which I had the

chance to examine answer every requirement, and are of special interest to Lichtdruckers, who want to copy the negative on both sides. The process has been patented, and will shortly be published in the record of patents.

The same Mr. Sandtner lately recommended a substance for use in the photographic laboratory which, till now, has been almost a stranger in it, namely, fluoric acid. He says that old and oft-used plates, which it was heretofore impossible to get clean again by any means, are cleaned so thoroughly by a treatment with diluted fluoric acid as to produce excellent negatives. The plates which have been used several times are first placed in strong potash lye, left there twelve hours, then washed well, and rinsed. Then they are put in diluted hydrofluoric acid (30 to 40 grammes liquid acid to 1 litre of water), which quantity suffices for more than one hundred plates. The hydrofluoric acid is furnished by the trade in bottles of caoutchouc, and, when cautiously handled, it is not so dangerous as generally assumed; and Mr. Sandtner states that he has often employed it in etching on glass, without meeting with the slightest accident. Before handling the bottle it is well to put on a pair of old gloves which have been soaked well in wax or turpentine. By bending the edges of a plate of lead a cup is made for the acid, in which the glass plates are placed, and rocked to and fro a couple of times. In a quarter of an hour the glass plates are taken out again, rinsed in pure water some time, dried in rags in the customary manner, and the plates are ready for use. Some brands of glass become somewhat dull by being cleaned with hydrofluoric acid, but this does not injure the transparency of the glass in any way whatever.

Speaking of fluoric acid, I will not omit to mention that Dr. Wolfram, in Dresden, lately made some very interesting experiments on fluoride of silver. This fluoride is, unlike chloride, bromide, and iodide of silver, easily dissolved in water. In regard to its sensitiveness to light the opinions differ very much. In Monckhoven's *Compendium of Photography* it is stated that fluor-silver shows a stronger sensitiveness to yellow rays than the above-mentioned silver salts.

Evvard asserts that fluor-silver sensitizes the iodine-silver plates to such an extent that instantaneous pictures can be obtained with them, and he adds that fluor-silver is sixty times more sensitive than iodine-silver. These statements must be erroneous, according to the researches of Dr. Wolfram. Fluor-silver superadded to iodine-silver produced neither shortening of exposure nor wrought any other advantage, and Dr. Wolfram even denies that in mixing nitrate of silver and fluoride of sodium, fluoride of silver is formed, stating that both substances remain unchanged side by side in the solution. Mr. Wolfram also did not perceive an increased sensitiveness to yellow rays in the fluoride of silver.

PHOTOGRAPHY AS APPLIED TO THE REPRODUCTION OF PLANS AND DRAWINGS.

BY DAVID TOWNSEND, B.S.*

THE various means by which drawings may be copied without the aid of a camera will, I think, be of interest to all, but more especially to draughtsmen and engineers, whose time is valuable, and whose dislike to making intricate tracings, proverbial. The different processes, which I will describe in detail, were all practised in my laboratory with a view to the adoption of the best by the works with which I am connected. I write, therefore, to benefit those who may be already on the road, or who wish to follow after. But, before passing to details, it would be well to consider the substances used as sensitizers, or picture producers, and the effect which light has upon them. This will enable us to better understand the chemistry of the processes, and perhaps point the way to new fields and improvements. The compounds most used to make a sensitive paper are chloride of silver, the persalts of iron and ura-

nium, and bichromate of potassium. These will be considered, with regard to the changes produced on them by light, in the order named.

Chloride of Silver.—Chloride of silver was the first substance noticed that changed by exposure to light. Its properties were known to the alchemists of the sixteenth century, who called it "lun cornua," but it was first brought to notice by the researches of Scheele in 1778. This celebrated chemist observed that whenever chloride of silver was exposed to light, chlorine was liberated, producing a blackening, and that on treating this black residue with ammonia, metallic silver was left behind. The present theory is that the chloride is reduced to the state of subchloride by the action of light, and free chlorine is liberated. It was also observed that when silver chloride was exposed in the presence of nitrate of silver the blackening was much more rapid, owing to the fact that the free chlorine liberated united with silver nitrate to produce fresh silver chloride. Thus we conclude that the sensitiveness is increased in proportion as there is a chlorine absorbent present. If, then, we sensitize a piece of paper, that has previously been salted, with nitrate of silver in solution, the sodium chloride will precipitate some of the silver as chloride, while the excess will still remain as nitrate, thus making a highly sensitive surface, and fulfilling all that is required for printing pictures.

Iron and Uranium.—The next salts we shall consider, in regard to their behaviour when exposed to light, are those of iron and uranium. Their reactions are similar, and we are indebted to Sir John Herschel and Niepce de St. Victor for the discovery of their peculiar properties. If we take two pieces of paper and brush them with a solution of ferric chloride, then expose one to the light and retain the other, finally flow ferricyanide of potassium over both, we will find that the one that was exposed will turn blue, while the other will remain unaltered. Now, as ferricyanide of potassium precipitates iron only in the ferrous state, we conclude that the action of light has been to reduce the ferric chloride (FeCl_3) to ferrous chloride (FeCl_2). By similar experiments we may say that the action of light on all ferric salts, under certain conditions, is to reduce them to the ferrous state. The conditions to which I refer are the presence of some organic matter, such as the paper, glazing, &c., because otherwise the reduction is exceedingly slow. This property of reduction by light possessed by all persalts of iron should be especially remembered, as it forms the basis of a number of processes whose details will be given hereafter. The action of light on the persalts of uranium, especially the nitrate, is exactly similar to its action on iron—it reduces all uranic to uranous compounds.

Chromium.—The remaining metallic compounds which are of value as sensitizing agents are those of chromium combined with the alkalies. The alkaline bichromates, and especially of potassium, are, under certain conditions, far more sensitive to the action of light than either nitrate or chloride of silver. Potassium bi-chromate ($\text{K}_2\text{Cr}_2\text{O}_7$) by itself is a permanent salt, but when in contact with organic substances it quickly decomposes in the light. This property and its extreme sensitiveness render it invaluable to photography, in which it forms the basis for numerous processes, such as the carbon, Woodbury, photolithographic, &c. It is also the principal ingredient in the aniline process, at present much used in Europe for the reproduction of drawings.

Having thus seen the action which light produces on the different substances, we will now consider how we can best use their peculiar properties for producing photographic pictures. It would be well to mention here that in all cases, whatever the process, the operations of producing a picture are substantially the same. First, there must be a suitable support or ground on which the picture is to be produced, such as paper; second, the ground must be coated with substances, called sensitizers, which shall be sensitively affected by the light; third, chemical reagents must be

* *Journal of the Franklin Institute,*

used which will combine with and develop the image produced upon the sensitive paper; and, fourth, fixing agents, or chemical solvents, must be used that will dissolve all unaltered sensitizing agents, and make the picture permanent. Let us now consider the different processes.

Silver Process.—As was stated before, Seele was the first to point out the effect which light had on chloride of silver; but Sir Humphry Davy, in 1802, was the first to produce a picture by the silver process; since that time it has made rapid strides toward perfection, and it is to-day the only printing process that has taken firm hold on practice. Of all the processes which I shall give, it is the most reliable, the easiest to govern, and yields the best results. The manipulations required are more numerous than difficult, and, after a little practice, become as easy as simpler methods. The operations, taken in their order, are as follows:—(1) Preparing the paper, or salting; (2) Sensitizing; (3) Exposing; (4) Washing; (5) Toning; (6) Washing; (7) Fixing; (8) Final washing.

1. **Salting the Paper.**—As the plain salted paper, which is invariably used for this process, is easily obtainable in the markets in sheets of any size, it is not necessary that time should be consumed in its preparation; but for those who are not convenient to any depot, or who wish to prepare it for themselves, the following directions will be of value. The papers most preferred are the Rive and Steinbach, but other brands of English and American manufacture will answer just as well for this purpose. If the paper be of the finest quality imported, the salting solution is composed of—

Ammonium chloride	...	...	1 part
Pure water	...	...	46 parts

but if it be the ordinary market article, or has not sufficient sizing, the solution should contain—

Sodium chloride	...	...	4 parts
Ammonium chloride	...	...	6 "
Sodic citrate	...	...	10 "
Gelatine	...	...	1 part
Pure water	...	...	460 parts

Sufficient of the solution must be made to cover the bottom of a pan to the depth of half an inch. The pan should be two inches larger each way than the sheet to be salted, and may be made of wood or tin, properly protected. It would be well to state here that all the pans, with the exception of the silver bath, can be made of tin thickly coated on both sides with asphalt, which renders them impervious to acids and alkalis. These pans be should made of a size to suit the largest drawing to be copied, and each operation should have a pan especially for that purpose. The salting bath is now poured into a pan, and all bubbles removed from the surface with a piece of paper; the paper to be salted is then taken between the thumb and first finger of each hand, at opposite corners, and curved so that on letting it down until in contact with the liquid, the centre line will touch first. The right hand is lowered carefully, and then the left, until the paper floats evenly upon the surface of the solution. If any air-bubbles are observed under the sheet, one corner is lifted and the bubbles touched with a glass rod. This is very important, otherwise the air, acting as a cushion, prevents the salting solution from touching the paper, and leaves a spot which will not become sensitive in the next operation. After allowing to float three or four minutes, the paper is raised by lifting two corners on the short side and drawing it evenly from the bath, after which it is suspended from a line by compression pins and allowed to dry. The process of swimming the paper, as described above, is also applied when sensitizing, and should be practised until perfection is attained. Care must be exercised in both operations not to allow the solution to flow on the back of the paper, as a black spot will be the result when it is exposed to the light. When the paper is dry, it is taken from the line, stamped or marked on the back, and laid away flat, to be

used as needed. A description of the preparation of albumen paper is not necessary, as it is seldom used for reproductions, and can be bought much cheaper than one could make it. For copying very fine engravings or architectural designs, it is sometimes desirable because of the brilliant finish and the pleasant color when toned.

(To be continued.)

SPIRIT PHOTOGRAPHS IN COURT.

THE Rochester Union says:—

"A singular suit at law has just been commenced in Dansville, R. L. Dorr having begun proceedings against W. J. Lee, a photographer of that place. It appears that Dorr came to Rochester a short time ago, and, hearing that the so-called spirit photographs were being taken at a certain place, went to try his success in securing upon the same negative with his own the faces of deceased acquaintances. He succeeded to his own satisfaction, which we will presume was the more easily obtained because of the fact that he was before a firm believer in Spiritualism. On returning to Dansville he became involved in a controversy with Lee regarding the matter, and the latter volunteered the opinion that the whole business was a humbug, and that he could demonstrate his position to the other's satisfaction. It is stated that Lee made a trial, and afterwards abandoned further attempts. Dorr sues for this breach of contract, but claims that he does not care so much for the value of the picture as he does to establish the fact that photographs of spirits are actually being taken. The trial will take place on the 22nd inst., and it is expected that a large number of witnesses from the photographers, the clergy, and the medical profession will be called. The *Dansville Express*, in commenting upon the alleged phenomenon, says: 'To produce upon the same negative plate, at the same time, a setting of familiar faces other than the sitter, involves a mystery not yet solved by the knowing ones, and we are waiting expectantly to know what manifestations are to come next.' It remains to be seen what the legal trial referred to will develop, but it is to be hoped that it will be sufficiently thorough and exhaustive to set many minds at rest on this question."

THE MANUFACTURE OF PHOSPHORESCENT SUBSTANCES.

A CORRESPONDENT of the *Scientific American* writes concerning the phosphorescent powders found on luminous clock dials. Having ascertained by analysis that this phosphorescent matter is nothing but sulphide of calcium, you say there must be something or other in the mode of manufacture of this substance to give it such a brilliancy as has never been obtained before.

Being in situation to know much about this subject, I think it will be agreeable to you if I give you some details on this question.

The phosphorescent matter of the luminous dials is prepared in Paris; the maker is M. André, 39, Rue Lacépède. Twenty years ago, being familiar in Mr. E. Becquerel's laboratory, he was taught by him how to prepare phosphorescent sulphides, and then began to make them for the chief instrument makers in Paris.

The first products obtained had but little intensity; but gradually M. André became more and more skillful in his work, and three years ago he was able to produce the substance you have seen on the dials. Such a wonderful result was obtained only by carefully studying the mode of manufacture, and depending only on a few tricks of hand. This I can affirm, but I cannot give you the details of the manipulation, which are kept secret.

M. André does not make only the blue violet powder used for dials; this colour has been chosen for that because it keeps luminous a longer time. But the results are almost as good with yellow, yellow-green, green, and orange powders.

The Photographic News.

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SOME NOVELTIES.

INVITED recently to pay a visit to Messrs. Marion's establishment in Soho Square, we there saw some novelties a brief mention of which will interest our readers. Our duties, whilst usually separate from the commerce of photography, can never be antagonistic, and are often closely associated with commercial aspects, where the interests of photographers are concerned. Hence we always feel a deep interest in every novelty which may give a stimulus to photographic trade prosperity.

Cadett's pneumatic shutter is now familiar to almost every professional photographer in the world, and has been very largely adopted in all kinds of studios. Introduced but a comparatively short time ago in this country, it was rapidly adopted by English portraitists, and has since been as cordially adopted in France, and other parts of continental Europe, and also in America. The one drawback which was occasionally urged against its absolute perfectness was the fact that the shutter was outside the lens, and its movement might at times distract attention. From the first it was pointed out that it might easily be adapted for inside use, but some mechanical difficulties made this not quite convenient. It has now been made, as Messrs. Marion showed us, expressly for inside use, all difficulties being eliminated, and the action perfect. The movement of the shutter, which is now placed immediately at the back of the lens, is very rapid, yet so gentle that there is no risk of disturbing dust, even in a very dusty camera, a thing which should not ever be found in any studio. The most restless child, or the most nervous sitter, may now be exposed without seeing a movement to distract or disturb the attention; in fact, the exposure may proceed without the sitter's knowledge or consciousness. The additional convenience secured does not add to the cost of the instrument. The arrangement is so simple that, with the instructions supplied, every photographer may easily fix the shutter for himself.

The next novelty brought under our attention consisted in some charming specimens as illustrations of a new size and style in portraiture, entitled the promenade portrait. We speak of the size as new, inasmuch as it is so to English photographers, although, if our memory serve us aright, the size and name were introduced some little time ago in America, and mentioned in our pages. The mounting and *entourage*, which are decidedly new, are very charming and effective. The size of the unmounted print is $7\frac{1}{2}$ inches by $3\frac{3}{4}$ inches. The dimensions of the mount are $8\frac{1}{4}$ inches by 4 inches. The print is mounted like a card within one-eighth of an inch of the edge at the top and sides, leaving a five-

eighths margin at the bottom. The black mounting card is a stout one, the edges being bevilled and gilt. The size especially fitted for standing figures, either male or female, and is especially effective for the very long flowing draperies of the present mode in ladies' dress. The size of plate for negatives is for single plates, eight inches by four and a-half, and for a double negative eight inches and a-half square. A size handy in every photographic establishment, the ten by eight, might be made to answer well for the double plate. Mounts, albums, and a very charming series of frames for the new size, are all provided, and we venture to predict for it a fair share of public favour. Probably at no former period did professional portraiture more require a stimulus to induce new life and activity, and any taking novelty calculated to aid in effecting this ought to receive a glad welcome.

Another aid to effective portraiture consists in some very admirable accessories in *papier mache*. These are of high class and excellent design. Too many of the accessories of this kind which have been employed in photography have been trumpery and inartistic in design, and without any harmony in their combination, classic and gothic, ancient and modern designs being mingled without the slightest trace of knowledge of the incongruity. Most of these under notice are modelled from well-known originals of high repute. Here is a series from Haddon Hall, balustrades, steps, &c. A piece modelled from a grand old tree is also very fine. A column presenting the fluting of the classic column on one side, and the clustered columnation of the gothic at the other side. The texture, colour, and general effect of these are excellent.

The "Soho collodion" is another novelty, with much excellent promise, which can only be verified by testing, and upon which we can, therefore, say nothing at present. A preparation for securing a retouching surface locally without treating the entire surface of the negative seems a useful idea. Of its efficiency we cannot speak. Of the very extensive stock of admirable photographic appliances we need not make any detailed notice here.

Another novelty is to be found at Mr. Solomon's warehouse in Red Lion Square, where we saw it at the request of Mr. Francis, of Rochford. It is entitled the photo-chromosome. It is an instrument for viewing lantern or stereo transparencies, and glorifying them by the addition of glowing colours. They are placed in a hollow cylinder, an enlarging lens in front, and beyond the slide is placed a glass cylinder coloured in sections with various tints. The light passing through this coloured cylinder reaches the transparency, and as the coloured cylinder is revolved, fresh tints illuminate the picture, giving varieties of sunshine and shade, dawn, sunrise, sunset, night, and moonlight. The effect is exceedingly pleasing, and the means very simple. Mr. Francis has protected his invention by patent.

FRENCH CORRESPONDENCE.

SOME REMARKS ON THE EMPLOYMENT OF THE ELECTRIC LIGHT FOR PHOTOGRAPHIC PURPOSES—ABILITY TO DISPLACE THE ACTINISM OF DIFFERENTLY COLOURED RAYS—A NEW IMPROVEMENT BY MONCKHOVEN IN THE GELATINO-BROMIDE PROCESS.

Some Remarks on the Employment of the Electric Light for Photographic Purposes.—My honourable colleague, who alternately with me contributes the French Correspondence to the PHOTOGRAPHIC NEWS, in his letter published in your issue of the 27th of June, takes up the subject of photography by the electric light, and mentions the dispute which has arisen as to the rights of M. Vander Weyde to the sole possession in France of the system which he has patented; he also states that it is M. Liebert who has purchased the French patent of the employment of the double reflection of the electric light, and that no other

person but he is entitled to the legal right of using this system. M. Versnaeyen also alludes to an article which I wrote for the *Moniteur de la Photographie* on the subject of the photographic *seance* by the electric light which was arranged by M. Pierre Petit at the Opera House on the occasion of the charitable fête in behalf of the sufferers by the Szegedin inundations. The author of the above-mentioned letter seems to think that I have not exhibited an impartial spirit in discussing this question, but that I have ranged myself on the side of M. Pierre Petit in the dispute, and in opposition to M. Liebert. He further accuses me of not having published the protest which was addressed by M. Liebert to the Editor of the *Moniteur de la Photographie*. Fortunately, I am in a position to give a complete answer to these assertions. First, then, the photographic feat which was accomplished at the opera fête seemed to possess so great an interest for those engaged in the profession, that I hastened to obtain as perfect an account of it as possible, in order to describe the process in the columns of the journal of which I am the Editor. Secondly, I gave the information just as I received it, with the exception of some condensation: the actual words used were: "Our fittings originate entirely with ourselves, nothing belonging to them is patented or patentable, and our professional brethren are quite at liberty to obtain for themselves commercially the same instruments as we have ready for use." Thirdly, no letter of protest was received by me before the 1st of July, the day on which the *Moniteur de la Photographie* appears, though, as I have since learned, M. Liebert addressed one to me on the 19th of June. Fourthly, the number of the PHOTOGRAPHIC NEWS containing M. Versnaeyen's letter was only received by me eight days after the date of publication, and, after reading it, I at once wrote to M. Liebert, and explained to him that I had no motive for taking a side in a dispute which could have nothing but a commercial character; that, in fact, I had been no more than a channel for the communication of intelligence which had been furnished to me. Lastly, in answer to my letter, M. Liebert forwarded to me a copy of the protest, which had been lost in the post, and this will be published in the next number of the *Moniteur de la Photographie* on the 15th inst. If my honourable colleague, before writing his letter for the PHOTOGRAPHIC NEWS, had only sent me a single line asking for information, he would not have laid himself open to the imputation of bringing a charge which—though no doubt made in all sincerity, and due in a great measure to a couple of mistakes of the post—the foregoing explanations have shown to be unfounded. I take this opportunity of declaring that I never mix myself up with quarrels resting on purely trade questions; their proper jurisdiction is a legal tribunal, and they in no way concern me. My part is to treat a disputed point on entirely technical grounds, whether of art or of science, and as I have quite enough to do in that direction, I have no inclination to touch upon interests of another kind, which cannot be discussed without raising personal questions. It is the business of M. Pierre Petit to come to terms with M. Liebert, as there is already a lawsuit between them; it is for me, acting on that line of impartiality which has been and is my habitual and regular rule of conduct, to keep myself quite outside the dispute—after giving publicity to M. Liebert's protest, for that is nothing but justice.

Power of Displacing the Actinism of Various Coloured Rays.

—Some time ago, in connexion with a paper read before the Photographic Society of France by M. Cros, I took up for a while the subject of the possibility of producing plates which should render correctly the real value of the radiations from a luminous body, and I then believed, and stated my belief, that the question of obtaining the relative values in negatives was one of the most important in the whole region of photographic science. More mature reflection, however, has convinced me that there are many

cases where this effect, so ardently wished for, would lead to nothing but deplorable results. Let us suppose that it is wished to reproduce with the same actinic value a picture in which certain colours of equal force as regards tone, but presenting to the eye well-marked differences—as, for instance, blue, yellow, and red—from three adjoining surfaces. In consequence of the equality of the actinism of these three colours, different as they may be in appearance, the photographic result will be a surface of equal value taking in the whole of the three surfaces of different colours. Modelling which is effected in this way in an oil picture would be converted in the reproduction by photography into a flat surface; the same thing, indeed, often happens with ordinary collodion when one chances to have a subject modelled in colours of equal actinic value—such as carmine, light blue, and light grey. With these three colours a subject can be very clearly modelled, but the negative taken from it will not present the same shades of difference as this modelling. In the reproduction also of subjects from nature, there will be prominences and depressions causing more or less intense shadows, an effect produced by the colour of the objects; but in this case the appearance of a reproduction executed in a medium which equalizes the actinic values would be that of a plaster statue. As all the colours act equally, there would be nothing left but the action, more or less intense, of the luminous rays after reflexion. In the case of a painting a similar treatment would not be available, since we have here a plane surface completely modelled, so that every gradation would disappear, and there would remain nothing but a kind of grey image without effect of any sort—without those pleasing contrasts which make the beauty of the photographic reproductions of paintings, in spite even of the falseness of some of the tints, which often substitute sombre tones for the luminous ones of the original. The ideal that we must place before us is to produce the effect of a chalk drawing, similar to an artist's copy in crayon of a picture. But how is this effect to be obtained? How shall we succeed in producing clear modelling when we have in front of the objective a subject whose half tones are formed by an aggregate of colours all producing the same effect on the sensitive film? Will it not, on the contrary, be necessary in such a case to find some means of rendering the actinic values unequal—to force, in fact, the blue and the rose, which have the same actinic value, but which produce so very different an effect on the eye, to reproduce themselves photographically, with a difference of action equivalent to their difference in appearance? If any one will take the trouble to think this over, he will soon see that the problem is much more difficult of solution than at first sight he would have any idea of. From considerations such as these, then, we are led to conclude absolutely that a process which would enable us to reproduce the solar spectrum in the form of a perfectly white band without the demarcations that characterize the red, the yellow, the green, &c., would be the worst process that could be conceived for the reproduction both of pictures and of natural objects; but that does not mean that there is no improvement to be effected in this direction, nor that all should be left as it is now because nothing better can be done. There is more especially to be sought for a means of bringing out the details in the shadows as in the most luminous parts; in the reds as much as in the blues, &c. And here at once we can lay our hands on an important auxiliary in the shape of sensitive films of great rapidity, like those of gelatino-bromide, with the further condition that the plate may be submitted to the action of light until the exposure has become sufficient to obtain the effect of even the most refractory colours. By developing we shall obtain a negative well defined in every part, but grey and transparent; in this state it would give indifferent positives; but by reinforcing with some gradually-acting medium, we can intensify to any

required degree without danger of smudging. And now I shall probably be asked, Will the green come out to the same extent as blue? Fortunately I am able to reply, No! If the green develops in an equal degree with the blue, and the yellow with the red, we should have an image of a whitish appearance representing rather a plaster cast of the natural object, than the object itself, with all its infinite variety of tone and colour. For my own works in photochromie, a result of the kind indicated would be highly desirable; but outside of this special application I do not think that it will be necessary to seek for a means of equalising the actinic values of the different colours. And when we have artificially produced a negative with the relative values which photochromic impressions require, we shall, by taking prints from it in monochrome, produce nothing but pictures of the most miserable and unpleasant appearance. We should perhaps, therefore, rather seek for a solution in the contrary direction—that is to say, in the dissimilarity of the actinic effects produced by the colouring of exactly the same actinic value. The circumstance above mentioned, that a more complete result may be obtained by over-exposure, will be found to be corroborated in a recent work of my excellent friend Dr. Monckhoven, and also by the observations of Captain Abney, Dr. Eder, and others. It is due to the fact that a longer exposure of sensitive films of gelatino-bromide does not, as is the case with wet collodion, expend its force in producing solarisation of that part of the spectrum which lies between the blue and the violet; on the contrary, its action is extended in the direction of the less refrangible rays beyond the sodium lines—that is to say, beyond the yellow, and even so far as the orange. The red is the most refractory, but we can even produce an impression of that part of the spectrum by prolonging sufficiently the time of exposure. Impressing our minds with these considerations, which I have endeavoured to render as clear as possible, we arrive at the conclusion that, though the displacement at will of the actinic action is a subject well worthy of investigation and experiment, it must not be sought for in the direction indicated above—that is, in the equality of the effects produced by the differently coloured radiations—but rather on the contrary road, or in the inequality of those effects.

Improvement in the Gelatino-Bromide Process.—As I have just spoken of my friend Monckhoven, I may perhaps be excused for committing an indiscretion in alluding to a new discovery of his before he himself has made it public; the result of his remarkable experiments on the preparation of gelatino-bromide is, that he makes his emulsion at one operation without any final washing. I can scarcely say more at present, but the process itself will soon be divulged by the author, and it will then be seen that he has made a great step in advance towards the realisation of a practical result capable of being worked on a large scale.

LEON VIDAL.

ON SOME RED AND YELLOW PIGMENTS FOR COLOURING THE WINDOWS OF THE DEVELOPING ROOM.

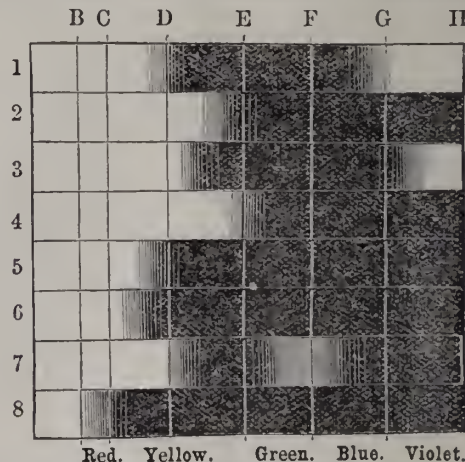
BY DR. J. M. EDER AND CAPT. TOTIL.*

ABOUT two years ago we published our investigations of the property which *chrysoidin* possesses of cutting off the chemically active rays, and we showed that leaves of gelatine stained with that substance do in effect cut off the actinic rays (the blue end of the spectrum), but not so completely as glass coloured red with cupric oxide. Our experiments at that time were made with silver bromide emulsion plates, which were developed by the alkaline method. Dr. Vogel performed the same experiment with iodo-bromide of silver plates, but found the action of *chrysoidin* to be not so favourable, for it allows some of

the violet rays to pass, and wet plates are more sensitive to these than dry bromide films. Especially in the region of the spectrum near the lines H' and H" Dr. Vogel observed that light admitted through a *chrysoidin* film produced a chemical action. More recently we have examined with the spectroscopic collodion and gelatine films which had been deeply stained with *chrysoidin*, and found that they permitted the green-yellow, the yellow, and the red rays to pass, none of the blue or violet ones.

To prove the permanence of *chrysoidin* to the light, we exposed for fourteen months a sheet of gelatine stained with that substance. At the end of that time the colour had nearly disappeared, or had been converted into a purplish tinge which admitted the blue and violet—that is, the chemically active rays—freely, while another sheet kept in the dark, but in contact with the air, had undergone no change. A piece of paper coloured with *chrysoidin* faded completely in the light, and turned quite white. Beneath a combination of yellow and green glass, which admits the red, yellow, and green, but not the blue and violet rays, neither the stained gelatine nor the coloured paper lost its colour; only the blue and violet rays, which are those the most largely absorbed by *chrysoidin*, destroy the colour, while the red and yellow produce no effect. The orange-coloured light which passes through *chrysoidin* varnish or gelatine also produces no effect on *chrysoidin* paper.

Notwithstanding that *chrysoidin* admits a portion of the green, it is to be preferred to fuchsin or aniline red. A varnish or collodion stained with the last-named substance admits a large proportion of the violet rays, even when the film is deeply coloured.* Only very thick films, which in the case of varnish are difficult to obtain, keep out violet light. When fuchsin has faded by exposure to light (the fading is probably due to the blue rays), a still larger proportion of the violet and blue is admitted. No. 1 of the accompanying table of the absorption spectra shows



1. Anilin red. 2. Ordinary yellow corallin (aurin). 3. Red corallin (pocinin). 4. Dragon's blood, concentrated solution. 5. Anilin red and corallin. 6. Ruby glass coloured with copper. 7. Ruby glass coloured with gold. 8. Cobalt glass and ruby-copper glass.

the behaviour of aniline red in a ruby red film of collodion or varnish.

As regards *corallin*, we would, in the first place, point out that the yellow variety of that substance—called, also, aurin or rosolic acid—differs both chemically and spectroscopically from the red variety or pocinin. The former, which is the ordinary product of commerce, is soluble in alcohol and ether, but not in water; the latter dissolves in water as well. Yellow corallin, when sufficiently concentrated, absorbs the whole of the violet, the blue, and

* Photographische Correspondenz.

* As artificial lamp light contains but few violet rays, the experiment must be performed in sunlight.

the green-blue parts of the spectrum as completely as ehrysoidin, and can be used for the same purposes as the latter—for instance, for colouring the paper in which sensitive bromide emulsions are packed. It is cheaper and more readily procured than ehrysoidin, and less affected by damp; but, unfortunately, it also possesses the defect of fading gradually on exposure to light. On the other hand, the red corallin does not cut off the violet rays (see No. 2 and No. 3 of the accompanying table), and cannot be substituted for the yellow corallin when the object is to stop out all the actinic light.

Dragon's Blood, which is rather more permanent, and was formerly much used for the preparation of a yellow varnish for the developing room, will not, when sufficiently concentrated, admit any green-blue, blue, or violet light; but it allows more of green light to pass than corallin does, and when dilute it even admits some of the blue—a consideration which must not be neglected. Galatino-bromide emulsions are so sensitive to green light that the latter must be completely excluded from the developing room, and only the red and orange admitted, for even the yellow rays are injurious.

To secure immunity from the reducing action of light, it is best, as pointed out by Abney,* to employ a combination of two or more colouring materials, and his exhaustive treatment of the subject renders unnecessary a discussion of most of the pigments on our part. We desire, however, to recommend especially a combination of the very prevalent aniline red, which completely absorbs the blue-green, the yellow-green, and part of the yellow, but allows the violet to pass with dragon's blood, corallin, or ehrysoidin, which cuts off the blue and violet. The two pigments thus complement one another to a certain extent, as will be seen on reference to the table. A combination of aniline red with corallin (No. 5 in the table) absorbs all the rays except the red and orange, and approaches closely in non-actinic power to the ruby-copper glass (No. 6); the combination acts more completely than any single pigment alone. Paper stained with such a mixture is a good protection against actinic light, and is a perfect substitute for ehrysoidin. The colour must, however, be intense, or the absorption of light will not be complete.

But films of varnish, collodion, or gelatine stained with organic colouring materials can never thoroughly replace coloured glasses, for the latter are even in tone and permanent in colour—that is, will never fade. Let us first consider the glass flashed red with copper; this cuts off the violet, blue, green, and part of the yellow rays, provided it be too light in colour. For the window of the developing room, only the glass stained red with copper must be used, not that stained red with gold, for the latter allows part of the blue and green to pass. The difference between the two is shown in the absorption spectra Nos. 6 and 7 of our table. Finally, we would refer to the best combination of all—that of blue-cobalt glass and red-copper glass—which is fully described by Abney in the above quoted paper. The deep red rays of the spectrum only are admitted by this combination, as shown in No. 8. In every case before glass for the dark room is selected, it should be submitted to microscopic examination. Such an examination is easily effected, a piece of the glass of a few square centimetres in size being quite sufficient for the purpose.

A FEW HINTS USEFUL IN THE PRACTICE OF GELATINO-BROMIDE PLATES.

BY A. J. JARMAN.

IN drying the gelatino-bromide plates, as described last week, my experience has been that the best plates are obtained by allowing them to dry either spontaneously or with the cold draught through the drying-box, and that

plates prepared in this way are all the better for being kept for some time.

I will give an instance. Last April I prepared a batch of plates, all of which were packed away in the common wooden plate-boxes. About nine days since I hunted my dark room over for an extra two dozen quarter-plate box, and found one among a lot of paper clippings. Upon examination, I found two dozen excellent plates of the most rapid description. I immediately tried one, and, to my utter astonishment and joy, I found it worked all right without methylated spirit or anything else to prevent the frilling. This box of plates was reserved as a treasure for children's portraits. All have worked well—no frilling whatever. One was a mishap. Thirteen of them have realized me £4 3s., and five remain.

Several photographers have said to me, "But don't you find the use of methylated spirit expensive?" I replied, "You had better use half-a-pint of methylated spirit, and secure a good negative, than to lose half-a-guinea for a dozen cartes." Not one of these plates requires an exposure exceeding a second in decent light. I have found that plates prepared with emulsion that has been kept for a few days, and dissolved in hot water instead of lukewarm water, are sure to frill. If this should unavoidably occur, pack them away in a box, and forget them for a month or two; in that time you will find them all right, and fit for any work. To be sure of getting your plates always good, too much stress cannot be laid upon always melting your emulsion at the same temperature it was digested at.

The specimens enclosed will, I think, bear me out in all I have described of this most beautiful process.

PERSPECTIVE FOR PHOTOGRAPHIC STUDENTS.

BY J. MARTIN.

MY last paper concluded with some remarks upon vanishing lines. These vanishing lines regulate the height and breadth of every object in the picture, and also produce the effect of what is called foreshortening; and where they converge too rapidly they produce the distortions instanced by the hat in the sitter's hand before mentioned. I remember a ludicrous instance of this in a pictorial comic Christmas card. The centre of some musical whaits (all looking extremely uncomfortable in the midst of a snow storm) is playing upon a cornopian which is so directly foreshortened that the observer can see nothing of it but its mouth, seemingly surmounted by a rough fur cap; beneath are a pair of short bandy legs and abdomen seeming as if they belong to a frog. The inequalities of surface of the ground plan of a picture often causes ludicrous mistakes, such as a man firing at birds he cannot see, water flowing up hill, and various others. One of the most difficult things for a beginner to draw, giving each line as a problem in foreshortening, is an overturned sitting-room chair lying endways towards the observer. It being quite impossible to enter into such an abstruse science as perspective to any great depth under present circumstances, I should recommend the learner to obtain some familiar treatise upon the subject. With this view, I mention Hayter's Catechism, and Thenot's Perspective, of which I believe there is an English translation.

Either of these contains sufficient information for the use of a photographer; but there are others much more voluminous, treating perspective as a mathematical science. Although a picture may be drawn with truth in just proportion with talented design, and in true perspective, still the objects there represented will bear but a faint resemblance to nature, even with the addition of light and shadow; but add colour, and then we may believe we can smell the blushing rose and taste the luscious grape. Of simple colours—that is to say, as they are sold

* See PHOTOGRAPHIC NEWS for 28th March, 1879, page 146.

by colourmen—seldom or ever are any introduced into a picture; but the whole colouring of the scene is toned to represent the character of the occasion, and any colour introduced of a different tone will look disjointed, and be said to stain. The brighter in colour the greater in degree will this effect be produced. For good examples of tone, the landscape of Cuype and Claud Lorraine may be particularly noticed. The tone of the picture must of course vary with the different peculiarities of the country to which the scene belongs, as well as the time of day, the time of year, &c. If the picture represents an interior, the tone that will pervade it must be in unison with that of the source of light which it receives; but a picture—for instance, a night scene—may be partially lighted by the moon, and partly by a fire.

Correspondence.

THE MIRAGE.

DEAR SIR,—As the above phenomenon is very seldom seen in this country, possibly a few lines may not be uninteresting. The case of Captain Scoresby, referred to in the PHOTOGRAPHIC NEWS last week, is not an isolated one.

Whilst engaged as photographer to the West Indian and Panama Telegraph Company's expedition in 1870-71, I had occasion to notice this phenomenon on several occasions—notably the following.

We had laid a cable from Santiago (or St. Jago), and part of our party had gone to Batabano, some miles from Havana, for the purpose of connecting the intermediate cable with the shore ends. With them (as convoy) went a Spanish gunboat (our convoy was H.M.S. *Vesta*). We were left at a place called Diego Perez—not a harbour, but a shallow place where we had buoyed the cable until our party should signal through the cable they had gone to connect that all was well. However, they did not succeed for some weeks, and we were getting short of fresh provisions, which the gunboat was to bring to us.

One afternoon, about four o'clock, we were astonished at seeing (of course, through the marine glass) what was the exact counterpart of the aforesaid gunboat, only reversed and high up in the sky, although the distance was computed at from twenty-five to thirty miles; still we could even make out her flag, which was a very large one. At that time nothing could be seen of the vessel herself; but the image gradually came down to the horizon; soon after her mast seemed to touch the water, and then the whole suddenly disappeared.

Shortly afterwards the vessel herself appeared, and in about two hours after we had a fresh meal on board.

If this is of any interest at all, I should add that I tried to take a negative of the image (as I had a permanent dark room on board); but at such a distance, and the ship rolling about so much, and the only lens possible to get even a microscopic picture, I was totally unable to obtain what would certainly have been a most interesting *souvenir* of my voyage in the West Indies.—I am, dear sir, yours truly,

ALBERT S. WITHERS.

3, Wyndham Street, Bryanston Square.

A WORD TO MY BROTHER OPERATORS.

SIR,—In last week's paper, "Mass," in a telling letter upon photography as a business, used a sentence that kindled an old fire in my breast. He speaks of employers who engage an operator and want him to do a little of everything, which literally means everything—general utility, in fact, and at starvation prices. He likewise adds that, unfortunately, the number of such employers is great.

My experience confirms that last assertion—their name

is legion! They are the fungus of the profession—they crop up like weeds—they swarm like a pestilence! Generally lacking education and devoid of natural talent, they eke out the position with the eye of the lynx and the craftiness of the fox. Having reared their glass-house and puffed its good qualities in the local papers, they next cast their eye upon the advertising columns of the photographic papers. It is a hundred to one if they answer an operator in want of a situation! Nay, they are more artful than that. Mark this, my brother operators! You will find the class I allude to advertise in all the grandeur of a Baker Street studio. The applicant must be thoroughly efficient, of gentlemanly appearance and manners, a first-class retoucher, and his character bear the strictest investigation. Of course, he has to send carte of self, and specimens.

From such an advertisement the best dis-engaged talent in the profession applies. Some one more unfortunate than his compeers is answered. Negotiations are entered into. If the applicant is married, so much the better for the shrewd employer. He next, perhaps, worms out of him that his means have sunk as low as his spirits, and consequently a bargain is struck that sinks the operator below the level of a labourer, both in his own estimation and in his pecuniary emoluments.

Do not blame the operator: his wife and children must have bread, and he jumps thankfully at the offer, laying the flattering unction to his heart that it is only for a time, and that something better will turn up for him by-and-bye. But, poor fellow, he does not see the day after day of down-right slavery; the nagging and worrying of discontented customers and the watchful eye of his master, who sucks his little arts and secrets from him—in short, who is learning of him, and who, when he thinks he has learned all, will turn him adrift in the same manner as he would brush the dust off his coat.

That is a fair sample of our bogus employers. The evil and harm they do to our class is incalculable. Four years ago I came from Northumberland to Exeter to fill an engagement as first-class operator and retoucher, at a salary of £1 15s. and five per cent. on all takings, to find that I had engaged to a man of the lowest order, whose principal takings were in shilling pictures. He misled me—purposely deceived me—wrote to me as if his place was first in the city. bluntly I told him what I thought, and, of course, quarrelled, so that at the end of the first week—Heaven, save the mark!—he discharged me. I had his letters, for he did not engage me in a hurry, and I fancied that I had a hold upon him. Armed with them, I went to the magistrate, and explained my case, but only to find that nothing could be done. Certainly the magistrate expressed deep indignation at the manner I had been used; his words were very consolatory, but I had spent my last £4 to take my wife and child with me, and now I was left with one week's wages to find another situation.

It is a pity that truth is a libel, for I should so much like to publish that man's name, and warn you against falling into his hands; for I have it from reliable authority that I was not the first, nor have I been the last, that he has served in the same manner—aye, and worse!

One sure sign of this style of employer, and one well known, I have no doubt, to my fellow workmen is, that they never return specimens. It is hard to lose your best work, but, my friends, console yourselves with old Dogberry's philosophy, and give thanks that you have so easily got rid of a rogue.

Now, after mature thought, I have come to the conclusion that the only way of lessening their power, and curtailing their facilities of obtaining good men to cheat, is for the said good men to *unite*, and, after using that word, I have only to mention our poor, struggling Benevolent Society.

I have penned the above in the hope that it will awake some of you to a sense of your duties, as "Mass's" letter

did to me; for I must honestly confess that I am a fair sample of the old but expressive saying of, "When the devil was sick"—for when money was scarce, and work hard to find, I made vows innumerable that the first spare coin should make me a member; but, here I am, very well off, and my vows forgotten. I dare say it is the same with a number of my brother operators; but let them wake up, and say with me, that before another week goes round there will be a new member, and his name will be, yours truly,

GEORGE BARDFORDE.

47, Milsom Street, Bath.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF IRELAND.

The first meeting of this Society was held at the Queen's Institute, Molesworth Street, Dublin, on Wednesday, the 9th instant, the President, Professor J. EMERSON REYNOLDS, M.D., in the chair.

The PRESIDENT, having congratulated the Society on the success which had attended its formation, expressed the pleasure it gave him to see such a large attendance of members present.

Mr. J. V. ROBINSON communicated to the Society his experiences of the gelatine bromide process, and showed the actual development of some gelatine plates of different descriptions.

At the close of his paper, many questions were put by the members anxious for further particulars on certain points, with a view of comparing the experiences relative to the manufacture of the emulsion, showing the warm interest which is taken just at present in all matters connected with this fascinating process.

A number of negatives and transparencies having been examined by the members, some surprise was manifested at the wonderful results obtainable by gelatine when photographing subjects totally outside the range of the wet collodion process.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

At a recent meeting, President NEWTON in the chair, the minutes of the last meeting were read by the Secretary and approved, subject to some corrections.

Mr. MASON said: I have here a plate of glass which is something of a curiosity. It was left in an alkaline solution inadvertently for some three or four months, and the effect of the strong alkali upon the surface of the glass is somewhat remarkable, giving by reflected light all the spectrum tints fully as brilliant as it is possible to produce them by any other means with which I am acquainted, while the surface is eroded, so as to render it worthless for photographic use. I also exhibit again the prints which were made by the Committee of the Section on May 19th, 1874, and in the tuning of which Mr. Newton's method was used for eliminating the hyposulphite after fixing. It was suggested to me by Mr. Anthony that it might be as well to show them at this time. I have kept them put up in this condition between glass—but not sealed—for convenience in handling. They have been made now nearly five years, and were shown at one of our meetings two years ago. They have been exposed to light in due part of that time, the light shining on them when the sun was in the right direction. Mr. Anthony was on the committee, and he suggested the use of permanganate of potash in the same way or similar to Mr. Newton's way of using lead; and this print exhibited, a portrait of the sculptor Carl Müller, was fixed as suggested by Mr. Anthony, and indorsed on the back of the print, as some of the members of the committee may remember, if any are now present.* It seems to have kept pretty well.

Mr. NEWTON: The feature of difference between the mode in which the hyposulphite was eliminated from these and the ordinary one was that the hyposulphite was decomposed by the lead solution in a very few minutes—about five being all that is necessary to render the print entirely free from hyposulphite. Not a trace could be discovered by any test we could

apply; whereas prints from the same lot that were left in running water all night, by careful test showed hyposulphite in the morning. The fact that they do not fade in five years after exposure to light, but appear to be as perfect as when they were first finished, is a matter of some importance, as silver prints have the reputation of fading or not being permanent.

Mr. MASON: The whole method was published at the time, or soon after, in the photographic journals, so that any one interested can easily find the full report of the committee upon the method.

Mr. CHAPMAN: I have here some coloured glass which I have been testing the non-actinic power of in a general way. I have only three specimens. One is a ruby which Mr. Mason has alluded to at some of our previous meetings, which I have marked No. 3; another, which is an orange, marked No. 2; and some glass which has been coated with an aniline colour in a film of collodion, marked No. 1. In certain classes of work with the spectroscope, it is desirable to suppress certain parts of the solar spectrum which overlap other parts, and at the same time diminish the light of the parts required to work on as little as possible. For this work I had found the aniline-coated glass to be considerably the best. This No. 1, you will observe, obstructs much less light than the others; but on examination in the spectroscope I found that it cut off all the more refrangible part of the spectrum from about half way between E and b, at a wave length of about 47,900 per inch. This is in the green; there was no blue to be seen. By reference to this coloured diagram which I have here you will see where these lines are located in the spectrum. Through No. 2 I could see the F line in the blue green, which has a wave length of about 51,500 per inch; and through No. 3, the darkest ruby, I could see the blue distinctly, could see lines having a wave length of about 53,200 per inch. I was somewhat disappointed with this glass, as it let through more green and blue than I expected, and I also found it selective in its action. It cut out nearly all of the yellow between the orange and green, and let through the green quite strongly, and some of the blue. From these results I judged that the aniline-coloured film would be the best for the photographic dark room. I therefore gave Mr. Mason the three specimens to try. He first tried them on the ordinary sensitised albumen paper, when, to my surprise, the No. 1 printed through first. This induced me to go a little further with the experiments, and I had him try a negative with his ordinary collodion bath. We then found the No. 1 to be much the more non-actinic; No. 3 came next, and the orange the least of either. Then an emulsion was tried, with results similar to the last, but not quite as marked between the anilino (No. 1) and ruby (No. 3). It will be observed that No. 1 is much the lightest in colour. I find it takes fully three thicknesses to obstruct as much light visually as the ruby does, and at the same time one thickness is much less actinic with the iodide and bromide silver salts. From these few trials it appears that it was the yellow light which did the work on the chloride paper. I would also remark that the emulsion showed more exposure in twenty seconds than the bath plate did in one and a-half minutes.

Mr. NEWTON: At the last meeting I exhibited a lens with a drop in the tube for instantaneous work. I have a print made from a negative taken of a street view from the roof of my residence. The reason why I brought it mainly was from the fact that it was developed with the oxalate developer. In the minutes read of our last meeting, it was perhaps noticed that I said something about the oxalate developer, expressing an opinion—or my impression, perhaps, rather—that it was more active, more potent than the alkaline developer. The oxalate is an acid developer. I have not had an opportunity to carry my experiments as far as I would like to, but I am still of the same mind, or the impression has been strengthened in reference to the oxalate developer as a developer by which a picture can be developed with much less exposure than with the alkali. This print that I show you is from a negative made with a pair of Morrison's new stereoscopic view lenses, with the second opening, developed with the oxalate developer. You can see that the cars and people were on the move.

Mr. NEWTON introduced Mr. Fontaine to the meeting, who exhibited to the Section two lanterns, one for opaque pictures and one for transparencies, and explained their properties. After the exhibition the President said he would like to have an expression of opinion of the performance of these lanterns as compared with the one exhibited by Mr. Taylor at the last meeting. One of the reasons why I would like an expression

* Mr. Mason has made a mistake in this. The method I suggested, and which was tried at the time, was the substitution of a salt of barium instead of the lead salt. The permanganate of potash was only used as a test for the presence of hypo. after the use of the lead salt.—H. T. ANTHONY.

of the views of those present is this: something of this kind should be owned by the American Institute for this Section; and a lantern lit with an oil lamp, if properly constructed, will answer all the purposes for which we want a lantern. We do not want to give an exhibition to entertain or please an audience; what we want is to test the quality of positives or transparencies and other photographic work by various processes. Something of this kind will answer all the purposes for which we need such an instrument. I would like to have a committee appointed to attend to this, and find out the best lantern of this description, or something of the kind, and to make a report at our next meeting. The lantern which Mr. Taylor kindly exhibited at the last meeting was a foreign-made instrument; but he can inform us about the necessary process to obtain one, if the committee should decide that that was the best. I would like to have some one offer a resolution that a committee be appointed to take this matter into consideration, also the means to have one permanently belonging to us.

Mr. MASON suggested that, at the meeting in June, other lanterns might be exhibited, and the Section would then be better able to judge. He had seen a lantern which the parties exhibiting it to him claimed was superior to any other before the public. If it could be got for the next meeting, the Section could judge. He asked Mr. Taylor the cost of the lantern exhibited by him at the April meeting.

Mr. TAYLOR replied about three or four pounds English.

Mr. FONTAINE stated that his firm make three sizes: one that takes a half plate, price \$10; the second size exhibited sells for \$20.

Talk in the Studio.

PHOTOGRAPHIC SCENERY IN A MUSICAL ENTERTAINMENT.—Those of our readers who have the good fortune to know Mr. F. A. Bridge, the esteemed treasurer of the South London Society, know that the sister art of music shares with photography his energies and interest. In a new programme of the series of musical entertainments he has prepared to place at the disposal of literary and other institutes and societies, we find one entitled "Gems of English Scenery and Song," in which transparencies from photographs of English landscape scenery by Mr. William Brooks will be exhibited in the "tridiaphanont," or now triple oxyhydrogen lantern. The very high quality of Mr. Brooks's landscape work will doubtless aid in giving beauty and interest to Mr. Bridge's excellent musical entertainment.

PHOTOGRAPHIC SOCIETY OF IRELAND.—We are pleased to hear that this Society has been started under the most favourable auspices, and with a much larger number of members than was anticipated. A report of the first meeting will be found on another page.

A NOVEL WAY OF OBTAINING A PLEASANT EXPRESSION has lately been successfully tried by Mr. C. W. Davis, Athens, Ga. Mr. Davis has trained a canary to sing upon a given signal. When about to remove the cap from the instrument, he gives the signal to the bird, which at once bursts forth in a sweet song. The sitter forgets all about the head-rest, the trying light, the wearisomeness of keeping a fixed position, &c. (all of which complaints are familiar to the photographer's ear). A pleasant and unconscious expression on the face of the sitter is the result of the little bird's melody. The idea is a good one, and, we think, might be put in practice by others.

BLACK POLISH ON IRON AND STEEL.—To obtain that beautiful deep black polish on iron or steel which is so much sought after, it is required to boil one part of sulphur in ten parts of oil of turpentine, the product of which is a brown sulphuric oil of disagreeable smell. This should be put on the outside as slightly as possible, and heated over a spirit lamp till the required black polish is obtained.—*Scientific American.*

BEAUTIFUL BLACK COLOUR FOR BRONZE.—A strong concentrated thin solution of nitrate of silver is required for this purpose. It should be mixed with an equal solution of nitrate of copper, and well shaken together. The pieces which require colouring are dipped into this solution and left for a short time. When taken out, they should be equally heated till the required black colour makes its appearance.—*Ibid*

To Correspondents.

J. BAILEY.—Wash the prints before toning in salt and water. The simplest toning bath, of the kind you desire, is made as follows: take one grain of chloride of gold in solution, and make it into a creamy paste with precipitated chalk, then pour eight ounces of hot water on it, stirring well. When the solution is cold it is fit for use. We always keep chloride of gold in solution one grain to the drachm. When we open a 15-grain tube of chloride of gold we at once dissolve it in 15 drachms of alcohol. The precipitated chalk you will obtain of a chemist under the name of "prepared chalk."

G. YOUNG.—Undoubtedly. The Lambortype processes are patented, and the Autotype Company are the owners of the patent. The Company will doubtless give you information what their patents cover and protect.

H. TAUNT.—The markings in your negative are perplexing. We never met with any such; but we have frequently had examples sent to us with enquiries as to their cause. We believe them to be due to floating scum on the nitrate of silver solution.

TYRO (Brighton).—Your letter was unfortunately mislaid, or it would have been answered last week. We regret, however, that we cannot give any very precise answer. It is possible to commence a photographic business on such a variety of scales that it is impossible to estimate the cost of such a step. You might commence moderately with a capital of one hundred pounds, and you might, with advantage, spend a thousand. The prices of the best lenses you will best learn from catalogues. If you send to Mr. Morley, of Islington, a dealer in first-class second-hand apparatus, for a catalogue, you may form a good idea of the apparatus required, and of the cost at which you may obtain it second-hand.

H. J. DAVISON.—The proposal to paint the interior of the studio "orange pea-green" originated in America, and we published all the details given. We have no means of asking the author any questions on the subject, as his communication was made in an American journal, and an American agent for the paint was mentioned.

DABUCA.—It is quite certain that no one can attain a copyright in your photographs without an assignment from you of such copyright, nor can any one legally register and claim a right in them. Your agent in London, by getting the Act, and taking steps in accordance therewith, can doubtless secure you a remedy.

AMATEUR.—There is no treatise on enlarging cameras published. Many descriptions of individual enlarging cameras have been published in our pages, and may be found on searching through the volumes. If you have or can procure a set of our YEAR-BOOKS you will find much information on the subject scattered through their pages. Camera makers, to whom photographers look for the construction of such things, rarely publish treatises on the subjects.

CLIAS. SNOW.—You will find full details of Mr. Bennott's developer and mode of using it on page 512 of our last volume, Oct 25th. 2. If you had described your mode of enamelling, we could probably have pointed out where the fault was. There are various methods of proceeding, and we don't know which you used. The irregular mottling and the tearing of the glaze are both due to imperfect contact between the print and the gelatine. Probably the prints were not properly wet when placed in contact with the coated glass plate, and not properly squeezed down.

A. J. JARMAN.—Thanks for the further very excellent examples of gelatine work. We shall be pleased to receive details of drying box, ruby lantern, and digesting kettle.

A. B.—The proportion of hyposulphite is not of vital importance; one ounce in six ounces of water will answer. You may add seven ounces to a quart of water.

Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

Mr. SYKES, Huddersfield,
Photograph of Town Hall, Huddersfield.

Mr. E. S. BAKER, Birmingham,
Photograph of Rev. R. Page.

Mr. B. R. LEECH, Macclesfield,
Two Photographs of Mr. Thos. Parrott.

SOUTH SHIELDS PUBLIC LIBRARY,
Photograph of Roman Tombstone.

Mr. F. DOWNER, Watford,
Photograph of the late Viscount M.
Photograph entitled "A Candidate for Fame."

Mr. SIMONS, Nottingham,
Photograph of William Thompson (*alias* "Bendigo").

Mr. J. EASTHAM, Manchester,
Photograph of Pope Pius IX., Sacred College of Cardinals, &c.

Mr. T. POPE, Birmingham,
Photograph of Mr. G. Biber.

Mr. P. M. LAWS, Newcastle-on-Tyne,
Five Photographs of Mr. George Wm. Waller.

The Photographic News, July 25, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AT LONDON-SUPER-MARE—THE PAGET COMPETITION.

Photography at London-super-Mare.—If London photographers have cause to complain just now of "depression of trade," the plaint can hardly be made by those in London-super-Mare. A visitor to Brighton just now cannot fail to be struck with the bright and prepossessing looking studios in the King's Road and elsewhere. We know, of course, that in this country it is not only in the capital that photographers of the first rank congregate, but that at the chief watering places they are unusually conspicuous. Mr. H. P. Robinson, of Tunbridge Wells; Netterville Briggs, of Leamington; Nesbitt, of Bournemouth; and Hughes, of Ryde, to mention a few good names at random, are examples, and in this respect, we believe, our country differs from France, Germany, and Continental nations generally. The Paris photographers, those of Berlin, and of Vienna, are unequalled by any of their brethren in the provinces; with us, on the contrary, in certain fashionable places of resort, photographic portraits are executed every bit as well as in the metropolis. Of course it is only photographers of premier rank in the provinces who thus compete with their brethren of Regent Street and Baker Street, but that first-class work is to be met with elsewhere than in London is a fact that needs not to be dwelt upon. The reason for this is not far to seek. When people are pleasuring they usually hold the purse-strings loose, and sitting for one's portrait, for some inscrutable reason, is counted among pleasures. So that Mr. Brown, of London, who holds half-a-sovereign to be sufficient payment for a few cartes of himself, has no objection to spend twice or three times the amount when Mrs. Brown and the Misses Brown are with him spending a few weeks out of town. Whether the family goes to Tunbridge Wells, or to Brighton, or across the water to Paris, they leave behind them that prejudice about the half-sovereign, and as they are willing to pay more, it naturally pays a first-class photographer to settle down in such places. We have mentioned Paris, because a large amount of work by Paris portraitists is done for the English, who, when they afterwards point to their French pictures as being double as good as those they had taken at home, omit to point out the fact that they cost double as much. At Brighton, as we have said, there are many fine studios. Mr. Mayall, who, our readers may remember, held the proud position of Mayor of Brighton last year, still enjoys the position of premier photographer in the queen of watering places. Mr. Mayall's studio is in the King's Road, and as he spares neither money nor energy to keep abreast of the times, it is no wonder that he is still a successful man. But he has to march quickly not to be left behind in the race, in which he has taken a part for a longer time than we care to remember. Mr. Mayall has happily got together a very fine series of celebrities, or rather of their portraits, for there are few of our great men and women who have not come under his notice and that of his camera. An especially fine portrait of Disraeli—or, rather, Earl Beaconsfield—another of William Black, the well-known novelist, and a third of the late Mr. Lewes, essayist and novelist, are among this gallery of notables. Messrs Henrah and Kent, and Messrs Lock and Whitfield, have also studios in the King's Road, where small delicate work, of the Williams and Mayland school, as it might well be designated, is executed with exquisite finish. These two firms, situated close together, appear to have made a bargain with one another as to the class of work they will execute, and neither strives to out-do the other with showy claptrap performances. The finish and pose

of the pictures in both cases testify to the art and technics of photography having been perfected to a high degree. M. Lombardi has also a studio in Brighton; he aims more to secure brilliancy and vigour in his productions, as does also M. Boueher, whose portraits at the Pall Mall Exhibition two years ago will be remembered by our readers. Another studio, a few doors from the Old Steyne, deserves also to be mentioned, that of Mr. Donovan, who was, if we mistake not, but recently the manager of M. Boueher. Mr. Donovan appears to be particularly happy in his depiction of children; there is a charming roundness in the modelling of the little limbs, and none of his sitters have that weariness of expression which is very common to infantile portraiture. Mr. Donovan displays, too, a good deal of the artist in his Rembrandt vignettes, some of which he executes with rare taste. There are other studios in Brighton that could be mentioned, scarcely, if at all, inferior to those here set down, for, as before remarked, the number of good businesses in London-super-Mare betoken a very healthy sign of the prosperity of photographers here. Glass-rooms, as is the case of those of many other watering places, are to be found here on the ground floor, and there is not that disagreeable "getting up stairs" which is well-nigh inseparable to London studios. A two-fold reason may be found for this. In the first place, space being not so valuable out of London, room for a ground floor studio is more easy to obtain; while, again, a photographer at a spa or health resort calculates upon having a large proportion of invalids among his sitters. To ask a lady or gentleman who lives in apartments on a flat to save the trouble of ascending and descending, and who passes most of the day in a bath chair, to mount three or four flights of stairs, is out of the question, and photographers who desire the custom of such invalids must, of course, provide for their comfort. Mr. Robinson's fine suite of retiring and reception rooms and studio at Tunbridge Wells, and Mr. Hughes' Regina House at Ryde, are two model establishments in this respect.

The Paget Competition.—The Paget £50 prize seems to be giving the jurors some difficulty. It is now some months since the competing candidates sent in their various plates and processes, and we know that the referees have already done a good deal in the way of examining the proposals sent in. But it must be remembered that the task imposed upon the jurors is no easy one, and it is a question, obviously, requiring much time and patience to settle. We are unaware of the number of competitors or the extent of the investigations to which the award committee are committed; but seeing that the object Captain Paget desires to secure is a dry process that, while it is trustworthy, is simple and capable of being worked by an ordinary individual who has given some attention to photography, it is very evident that a searching investigation must be made. As to securing a very simple and reliable method, one that shall give no trouble and always yield good pictures, we can only say to photographers, that we wish they may get it. However, if there is such a thing knocking about in professional or amateur studios, we certainly think that the means taken by Captain Paget is likely to unearth it.

HOW TO USE EMULSIONS.

BY J. SALOMON.*

It would not be a kindness to the reader to occupy his time with a description of the innumerable methods by which collodion emulsion is prepared, because, on the one hand, its manufacture requires great experience and special preparations; while, on the other, it can be purchased ready prepared at a low price and of a degree of excellence

* The Photographic Times.

to which the tyro in chemistry could never hope to attain.

Plates ready sensitized by emulsion collodion are now extensively sold; indeed, it is scarcely saying too much to assert that all the sensitive dry plates that are sold are prepared by one or other of the emulsion processes.

Emulsion photography therefore naturally divides itself into two parts: the method of using such emulsion as can be purchased in preparing dry plates by its means, and the method of developing emulsion plates, no matter by what means prepared, or whether they have been made by the photographer, or purchased.

If the emulsion be what is termed "washed emulsion," it will have its organifier or preservative mixed up with it, and in using it, the mere act of pouring it upon a glass plate suffices to render such a plate ready for exposure, either immediately or after several months. If the emulsion contains an excess of soluble bromide, the plate coated with it will not be ready for exposure until it has been immersed in a vessel of water to wash it, and be subsequently treated with a preservative. As "washed" emulsions are now supplanting all other kinds, we shall begin by explaining in what way it is to be used.

The plate of glass having been cleaned, it is advisable, previous to coating them, to give to them either an entire substratum, to prevent the collodion film from leaving the glass during the subsequent operations, or to coat the margin of the plate in a similar manner. A useful solution for this purpose consists of four or five grains of india-rubber dissolved in an ounce of benzole. This, when poured upon a clean plate, leaves an exceedingly attenuated film of rubber upon the surface; but thin though it be, it insures the adhesion of the collodion film. If an edging only is to be applied, the india-rubber solution should be much thicker (say about the consistency of collodion), and it should be applied by means of a camel's-hair brush. Many do not coat their plates with a substratum applied either in whole or in part, but content themselves with sprinkling over the surface a little powdered French chalk which, when rubbed briskly over the plate, gives such a quality to it as to cause the collodion to adhere with all the required tenacity. The emulsion must be poured upon the plate slowly and with deliberation, and run from corner to corner, the superfluous emulsion being poured back into the bottle. To prevent it from drying in ridges, the emulsion must be drained off at one corner, and after having been kept in that position for such a time as to insure the collodion having dripped off, the plate must now be tilted so as to stand in a vertical position. This position must be maintained until the ridges first formed quite disappear, when the plate may be reared up to dry, after which it is ready for use, and may either be placed in the store-box or in the dark slides of the camera.

If an emulsion having an excess of soluble bromide be used, the plate, after having been coated, must be placed in a vessel of water to be washed, after which it is immersed in a ten-grain solution of tannin, and then dried. Instead of tannin, an infusion of coffee or tea may be employed with advantage. But this kind of emulsion is seldom now used.

To Develop an Emulsion Plate.—The plate is first attached to a pneumatic holder, and a little methylated spirits of wine poured over the surface so as to wet it all over. Allow this to act for about a minute, during which time you are mixing in a suitable cup the developing solution. This having been done, wash the face of the plate by means of a stream of water, until the greasy appearance caused by the spirit disappears. This treatment with spirit and water opens the pores of the collodion film, and enables it to be penetrated by the developer.

Each manufacturer of plates has his own way of conducting the development, but while there are apparent differences in the instructions sent out along with the

plates of each respective maker, the real difference is so very slight that any one developer will suit the plates of all makers.

The composition of every one of the alkaline developers is restricted to three classes of ingredients: pyrogallie acid, ammonia or other alkali, and bromide of potassium or other soluble bromide. The pyrogallie acid develops the image, the alkali gives it vigour and force, while the bromide checks the action and prevents fogging. With this general explanation we now enter into details.

One of the best methods of developing a negative, especially for beginners, is that in which he is enabled to feel his way at each stage, and adopt precautionary measures to obviate the effects of over- or under-exposure. Proceed thus:—

Pour over the surface of the plate (which is now wet) enough of a four-grain solution of pyrogallie acid to cover it. Then watch attentively the appearance of the image, which comes up very faintly. Should it not appear in the course of a minute, add to the pyro solution one drop of diluted ammonia, composed of one drachm of ammonia to twelve of water. This will cause the image to appear. Now observe the character of the picture. If it appear to be flat and over-exposed, check the action by adding to the developer one or more drops of a ten-grain solution of bromide of potassium. This checks the further developing, but permits the image already developed to acquire intensity. On the contrary, should the feeble image first brought out show indications of under-exposure, this must be remedied by prolonging the action of the pyro, and adding more ammonia solution, refraining from using more bromide than suffices to prevent the fogging of the shadows.

By following these hints a beautiful negative can always be obtained, even when the plate has been a little over or under-exposed.

It is convenient to keep a concentrated solution of pyrogallie acid in alcohol. Also, instead of liquor ammonia, carbonate of ammonia may be used. The following formula has been much employed, and gives good results. It is that of Colonel Wortley's.

A.—Pyrogallie acid	...	...	96 grains
Alcohol	...	...	1 ounce
B.—Carbonate of ammonia	...	...	64 grains
Water	...	...	1 ounce
C.—Bromide of potassium	...	...	16 grains
Water	...	...	1 ounce

These are kept in separate bottles, and, when used, are mixed in the following proportions:—

Water	...	...	1 ounce
A	...	...	30 drops
B	...	...	40 "
C	...	...	10 "

This is poured on the plate as the iron solution, and the picture flashes out at once.

Another good developer is composed by

Washing soda	...	...	1 ounce
Bromide of potassium	...	...	2 grains
Ammonia	...	...	2 drachms
Water	...	...	10 ounces

This is first applied to the plate, and is afterwards poured back into a measure, in which a quantity of pyrogallie acid, about the bulk of a pea, has been placed. When this is returned to the plate the image comes out very evenly.

It is generally not desirable to give the plate its full intensity by the alkaline developer, but to do so with acid pyro and silver. The proportions are:—

Pyrogallie acid	...	...	4 grains
Citric acid	...	...	3 "
Water	...	...	2 ounces

After the image is developed and washed, a little of the

above is poured on, and then one or two drops of a twenty-grain solution of nitrate of silver is added. Take care not to make the image too dense, because, being of a non-actinic brown colour, a negative that appears thin often prints strongly.

Fix in a saturated solution of hyposulphate of soda.

To Develop Gelatine Plates.—This is done precisely the same as the collodion emulsion plates, omitting the first application of alcohol, using water only. Mr. Kennett's formula is as follows:—

N Mix in the following proportions—

o. 1. To 4 grains of pyrogallic acid, 1 ounce of water.

No. 2. To $\frac{1}{2}$ -ounce of the strongest liquor ammonia, 8 ounces of water.

No. 3. To 3 drachms of bromide of potassium, 8 ounces of water.

Mix 2 and 3 together in one bottle; (they keep better in this state than separately), and proceed as follows:—

Pour over sufficient of No. 1, to which has been added one drachm of the mixture Nos. 2 and 3 to each ounce of No. 1. The image will now in a short time appear, and gain in strength; at this stage of the development any amount of density may be obtained by adding one or two drops of plain ammonia and water, of same strength as No. 2. When of sufficient density, wash well, and fix in hyposulphate of soda, strength four ounces to a pint of water.

SENSITIZING TISSUE FROM THE BACK.

BY H. J. BURTON.*

SENSITIZING tissue from the back has so many advantages, that I think a few words pointing them out may be acceptable to carbon workers. I will first of all remark that to produce the finest work in carbon requires the same amount of care and cleanliness as for the production of spotless negatives.

When the tissue is received from the makers, it should be cut up into sheets of convenient size, and stored between boards; in that condition it will be found much more easily manipulated subsequently. What size to cut it will depend upon the requirements of the purchaser—30 in. by 18 in. would be a very good size to handle, cutting strips across the hand 18 in. wide. In handling tissue, a pair of knitted white cotton gloves should be worn. Having the tissue in flat sheets, we will now sensitize it, with the following solutions:—

Water	...	...	...	20 ounces
Liquor ammonia	...	...	...	1 ounce
Bichromate potash	...	...	...	4 ounces.

Mix the ammonia with the water, then grind up the bichromate and dissolve in it.

Have a flat board, larger than the sheet of tissue to be sensitized, and cover it with blotting-paper, and on that lay the tissue face downwards, first dusting it and the blotting-paper with a flat camel's hair brush. Now pour out a small quantity of the sensitizing solution into a saucer, and, with a sponge of good size, wet the back of the tissue evenly with the solution for (say) three minutes, and hang up to dry in a room where there is a fire, but taking care to let the back of the tissue be presented to the fire, and at a distance of about six feet from it. There will be little chance of its running, except the weather happens to be exceedingly hot.

The advantages claimed for this method of sensitizing are:—The tissue may be used much sooner after sensitizing, on account of the small amount of liquid absorbed, as by applying the sensitizing solution at the back a much stronger solution may be used without any fear of its crystallizing upon the surface of the tissue. No fear of running in hot weather.

The face of the tissue (which in every case must form part of the picture) is kept perfectly clean, as no particles in the bichromate solution can settle upon it, and the fact of no free bichromate being upon the surface of the tissue would have a tendency to give it better keeping qualities. Large sheets can be sensitized, and no large dish or large quantity of solution required.

A solution of bichromate of potash undergoes no change; but if once used for sensitizing tissue a slow decomposition commences, which in time forms an incrustation upon the inside of the bottle in which it is kept; no doubt caused by the solution dissolving some of the constituents of the tissue when immersed in it, and, if used frequently, is a certain cause of insoluble tissue.

CAUSES OF FOGGING.

BY O. W. OSBORN.*

MUCH has been said and written by those well posted in photography, relative to the importance of keeping everything neat and clean in the studio, and especially in the dark-room; yet a glance at some of the dark-closets in the smaller galleries would suggest that such instructions and teachings by the older heads in photography had been calculated to serve the purpose of pleasant Sunday reading, by perusing which the photographer might wile away a few leisure hours, instead of beacon-lights placed upon the shores of the vast sea of photographic perplexities to guide the weary artist into the distant haven of photographic intelligence.

The dark-room, simply because it is a dark room, very frequently becomes the receptacle of everything which may happen to come in the way or appear obnoxious in other parts of the atelier. Old boxes full of straw, acid dishes containing old plates and giving off disagreeable fumes, which of themselves produce fog, a lot of empty bottles scattered around on the floor and shelves, and a quart or two of dust and dirt in each corner, are not unfrequently met with. You might spend thousands of dollars in the purchase of fine furniture, instruments, and apparatus, and yet, after all that, you will never succeed in producing anything above mediocrity, unless some care and attention be given to this particular department. If some of those photographers whose artistic (?) productions have never taken a prize medal at a foreign exposition could have occasion to compare their dark-room with that of some first-class workman who has received a grand medal of merit at Paris, London, or Vienna, they would find upon inspection and inquiry that their success is not to be attributed to the use of some particular brand of collodion, or some lately-discovered developing agent. Success is not likely to crown the efforts of any man who takes and reads no literature pertaining to his profession, and who shuts himself up in the quiet seclusion of his own dingy gallery, with its hush of dirt, and imagines himself the fountain-head of all photographic information. Not many months ago, the writer of this article met one of those peculiar kind of photographers last alluded to above, who had voluntarily reduced the price of photographs from three dollars per dozen to one dollar and fifty cents, and even less, rather than miss a trade, and that, too, in the absence of all opposition; who, when receiving fifty cents from a customer for eighteen tintypes, remarked that he would not fear Sarony, Bogardus, or Mora, if they were to bring their fine establishments and set up in opposition to him. Such egotistical, homastic assertions from one so low in the scale of photographic intelligence, grates upon the ear of the refined, like the braying of the illustrious sire of the mule.

For many years I followed the rules laid down by my instructor in regard to the arrangement of the dark-room, one of which was to keep the cyanide, hypo, sulphuret, and all the different acids in the dark-room within easy reach of the

* Autotype Notes.

* Practical Photographer.

operator; but after considerable study and sad experience I came to the conclusion that there was undoubtedly something wrong. A general overhauling of matters and things revealed the fact that acid dishes, cyanide, hyposulphite of soda, sulphuret of potassium, and dirt, were not calculated to be valuable acquisitions to a properly-arranged dark-room. When the above articles are present in large quantities, they work serious mischief. Hard, chalky negatives, with no details in either the lights or shadows, is the result of keeping cyanide and sulphuret where their fumes can gain access to the plate before exposure and development. Fog is produced by dirty plates, dirty fingers, fumes of cyanide, sulphuret, turpentine, and ammonia in the dark-room. Never attempt to silver a new fume in the same room where plates are coated, sensitised, and developed, for the fumes of ammonia, being alkaline, will produce fog as certain as the sun rises in the east. If the articles above mentioned are entirely prevented from gaining access to the dark-room, and that place be kept neat and clean (for it should be wiped all over inside with a wet cloth every evening), and the bath, collodion, and developer be made of pure materials and the proper strength and thoroughly harmonized, there will be no more danger of fog than there is of a collision of the earth and the sun.

I would recommend every artist to use albumenized glass, and even though he may not be an artist in the strict sense of the term, yet good negative glass, well albumenized, and pure materials, with a fair share of brains, will make a very good photographer, which is almost equivalent to being an artist. No man ever achieved success in the photographic business without a good deal of care, forethought, and painstaking exertion to equal or surpass the best work made by his competitors.

Some writers commit a serious oversight in giving directions for securing rapid-working silver solutions. They give a formula with all the different proportions of water, silver, nitrate of baryta, and acid, but not often do they give directions for harmonizing the collodion bath and developer. It is a well-established fact that if no harmony exists between the solutions, then nothing but a dubious lot of photographic apologies for pictures will be the result. It is another well-known fact among experienced workmen that if the bath is acid, the collodion must also be very slightly acid in order to preserve harmony and prevent streaks in the direction of the dip. If the one is acid and the other alkaline, the moment they are brought in contact with each other an effervescence ensues, which is fatal to clean manipulation, for lines, marks, splotches, and veilings of one kind and another will be the result. If the collodion is very red, it indicates acidity, which is caused sometimes from the ether, which often contains acid, and sometimes from the cotton, which has been imperfectly washed; and often, yea, very often, from the decomposition of the iodides used in salting. If the collodion contains an excess of iodide of potassium, it will work quick when two or three days old, but will soon begin to lose its good qualities and will turn very red, in which condition it is wholly unfit for the production of good negatives. The red colour can be removed from the collodion by dropping a small piece of cyanide into it; but I do not approve of that method, for the reason that it renders the film very tender. The best thing I ever found for removing the red colour from collodion is a few drops of spirits of ammonia; a small piece of unslacked lime will have the same effect, but the collodion must be filtered again before using.

When a bath is tested with litmus paper and found to be quite neutral, it is then in its most sensitive condition, and must be used with a collodion containing very little or no colour, if the full effect of rapidity, roundness, and brilliancy be desired. No quick work or instantaneous views can be made with old red collodion and a bath containing a quantity of acid; at least, the writer has tried all the different ways, and came to the conclusion years ago that the nearer neutral the bath and collodion could be kept, without being alkaline, the quicker and better were the results. It is of little use to take an old bath which has been crowded full of acid

in the vain endeavour to get rid of fogging, and neutralize the same, thinking to make a rapid working bath, for the nearer neutral it is, the less organic matter it must contain in order to work clean and clear in the shadows. The best plan is to weaken an old bath until it indicates about ten grains to the ounce by the hydrometer, which is best done by pouring the bath into distilled water (having previously neutralized the bath), and filtering to get rid of the excess of iodide, and after sunning for at least a week it may be again filtered and placed in an evaporating dish and boiled down to almost dryness, when it can be taken off and cooled and reduced to forty grains to the ounce, when you will find, by the addition of one drop of glacial acetic acid to the quart of solution, that it will work good enough for anybody, unless the bath previously contained cyanide, in which event it will never work satisfactory. If the bath is acid the collodion should be slightly red; if neutral, then the collodion must be clear. I may say the best results are always obtained with a neutral bath and a clear or almost colourless collodion.

Streaks in the direction of the dip are caused by a want of harmony between the collodion and bath. A drop or two of tincture of iodide added to the collodion will generally effect a cure; but if it be of a faint orange colour, and the bath indicates acidity, then it is better to neutralize and sun the bath, for it is a settled fact that old King Sol is the best doctor a photographer can employ in cases of sick baths. It is always best to have a number of baths for different occasions, so that if one gives down on a rush of business you have another in readiness, and thus be in a position to accommodate any reasonable number of customers without any serious trouble to yourself or annoyance to the sitter.

There is one more serious fault with many, and that is they spend the earnings of the room in horse-trading, which should properly be used in buying food for the cow that gave the milk; but instead of that they have but one bath, which is used day after day for negatives and ferrotypes alike, not stopping to remember that the conditions which favour the production of a good ferrotype are wholly unsuited for the production of negatives. While a ferrotype bath may, and in fact must, be slightly acid, a negative bath, when made of pure materials, seldom requires the addition of a restraining acid. Any photographer who aims to produce good work will never attempt to make use of but one bath only, but will provide himself with four—two for negatives and two for ferrotypes, and will mix two different kinds of developers to suit the different kinds of work in hand.

In testing old baths to ascertain the amount of silver they contain, the chances are in favour of the operator being misled by the indications on the scale of the hydrometer. Every photographer who has given the subject a thought must know that every plate which is dipped in the bath leaves behind a certain amount of chemical compound which, though not so heavy as silver, yet contains sufficient density to partly compensate for the loss of specific gravity sustained by the bath. Whenever a collodionized plate is immersed in a solution of nitrate of silver, a double decomposition ensues, wherein bromo-iodide of silver is formed in the body of the collodion film, and the bases of the salts used in sensitising the collodion are liberated. The theory is this: the iodine and bromine contained in the iodides and bromides used in salting the collodion having a greater affinity for silver than for the base with which they were combined, desert their first love and unite with the silver, forming bromo-iodide of silver: the gas liberated by such decomposition immediately uniting with the bases before liberated by parting with their iodine and bromine, forming nitrates of the bases, whatever they may be, and these nitrates, being soluble in a solution of nitrate of silver, are immediately dissolved and taken up by the remaining silver, thus helping to maintain the specific gravity of the bath solution, thus deceiving the photographer, who thinks his

bath rich in silver, when in reality it may be one-third nitrate of cadmium, ammonium, or potassium, or a combination of all these, depending entirely upon the salts used in the collodion.

A curious phenomenon sometimes occurs when there is a want of harmony between the collodion and the bath, in the shape of well-defined streaks which extend from that edge of the plate which first entered the bath, to the opposite edge, growing gradually weaker until they mingle together, forming a perfect veil over the entire edge of the plate which was last covered by the silver solution. The same effect can be produced on a cool day by breathing on the surface of the plate and wiping with a brush before the moisture has had time to evaporate. But if satisfied that it is the want of harmony which produces them (for you can settle that question by first breathing upon the plate and drawing the dusting-brush from one end to the other, and afterwards dipping the plate so that the long side shall strike the solution first), it will be best to test the bath for acidity, and if found to contain enough acid, the streaks and veiling can be removed by the addition of a few drops of tincture of iodine, which you can make by dissolving eight grains of iodine crystals in one ounce of Atwood's patent alcohol. I cannot too strongly impress upon the minds of those photographers who are troubled with fog of different kinds, lines, marks, dots, pinholes, comets, &c., the importance of establishing a rule to wash and clean up the dark room every evening after the day's work is done, for fine work cannot be done in a room where everything is covered an inch deep with dust and dirt. After a thorough renovation has been effected, which would be a very heavy task in some rooms, it need not require more than fifteen minutes of an evening to clean everything about the dark-room, which legitimately belongs there, and the small amount of trouble and expense incurred will be the means of causing you to go home Saturday evenings with a lighter heart and heavier pocket than you would if small matters like the above had not been attended to properly.

PHOSPHORESCENT POWDERS.

A RECENT English patent, says the *Scientific American*, is to obtain and to utilize at night time the light taken or absorbed during the day time from direct or indirect sunlight, or from an artificial light, either by employing phosphorescent powders simply after exposure, or by augmenting their brilliancy by means of electricity. The composition and manufacture of the luminous products and their applications without the use of electricity, is thus described: 100 parts by weight of a carbonate of lime and phosphate of lime, produced by the calcination of sea shells, and especially those of the genus *Tridacna* and the cuttle fish bone, are to be intimately mixed with 100 parts by weight of lime rendered chemically pure by calcination, and add 25 parts by weight of calcined sea salt; from 25 to 50 per cent. of the whole mass of sulphur, which incorporate therewith by the process of sublimation; and from 3 to 7 per cent. of colouring matter in the form of powder composed of monosulphure of calcium, barium, strontium, uranium, magnesium, aluminum, or other minerals or substance producing the same physical appearances—i.e., which, after having been impregnated with light, becomes luminous in the dark. After having mixed these five ingredients intimately, the composition obtained is ready for use according to different methods of application. In certain cases, and more especially for augmenting the intensity and the duration of the luminous effect of the composition, the patentees add a sixth ingredient in the form of phosphorus reduced into powder, which is obtained from seaweed by the well-known process of calcination. As to proportion, it is found that the phosphorus contained in a quantity of seaweed, repre-

senting 25 per cent. of the weight of the composition formed by the five above-named ingredients, gives very good results.

The phosphorescent powder thus obtained, and reduced into paste by the addition of a sufficient quantity of varnish, such as copal, may serve with advantage for illuminating a great number of objects—e.g., buoys, sea compasses, barometers, street plates, sign boards, and other similar objects—by arranging it in more or less thick coatings upon a plate of metal, wood, glass, or other material, covered by a transparent glass; this powder may also be employed for theatrical scenery or pictures, artificial flowers, and other similar articles by the application of one or more coatings of the powder incorporated in the varnish, or else by varnishing previously these objects and by sprinkling the dry powder upon the varnish still damp, and, in this case, the covering piece made of glass or other transparent material may be suppressed.

These powders are also employed for manufacturing solid objects generally made of cellulose, paper paste, papier-mache, artificial ivory (sometimes called coralline), and other materials of a similar nature, by sprinkling the surface of these objects, or only certain parts of the surface (still damp or moist) which are usually exposed to light, and by compression in moulds or otherwise in order to incorporate definitely the phosphorescent powders into the surfaces. The amount of powder applied should not exceed the thickness of a thin sheet of cardboard; it may be employed either for coating the whole surface or certain fractions thereof, so as to produce various designs, inscriptions, or effects. For this application, various powders are also applied, which contain different colouring matters, so as to produce effects of various colours.

The dry phosphorescent powders are also converted into translucent flexible sheets of unlimited length, thickness, and width, by mixing them with about 80 per cent. of their weight of ether and collodion in equal parts in a close vessel, and rolling the product into sheets, with which any object may be covered which is intended to be luminous in the dark.

The phosphorescent powders may also be intimately mixed with stearine, paraffine, rectified glue, isinglass, liquid silice, or other transparent solid matter, in the proportion of from 20 to 30 per cent. of the former with from 50 to 80 per cent. of either of these substances, and this mass is then reduced into sheets of variable length, width, and thickness, according to their intended applications. A luminous glass is also manufactured by means of the above-mentioned phosphorescent powders by mixing the same in glass in a fused state in the proportions of from 5 to 20 per cent. of the mass of glass. After the composition has been puddled or mixed, it is converted into different articles, according to the ordinary processes; or after the manufacture of an object still warm and plastic made of ordinary glass it is sprinkled with the powders, which latter are then incorporated into the surface of the article by pressure exerted in the mould, or in any other suitable way.

It has been observed after various trials, that the passage of an electric current through the different compositions augments their luminous properties or brilliancy to a great extent; this peculiarity is intended to be utilized in various applications too numerous to describe, but of which buoys form a good example. The current of electricity is furnished by plates of zinc and copper mounted on the buoy itself, when the latter is used at sea; but in rivers and fresh water inlets the battery will be carried in the interior of the buoy. To secure the full effect, from 10 to 20 per cent. of fine zinc, copper, or antimony dust is added to the phosphorescent powder above described. The patentees, Peiffer, MacCarty, and De Sagan, have devised a special form of buoy, which they claim is their invention, in company with the various applications above described.

The Photographic News.

Vol. XXIII. No. 1000. JULY 25, 1879.

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CLUB PORTRAITS.

WHEN business is dull, expedients of all kinds are tried to give it an impetus; and the establishment of portrait clubs has found favour with some photographers. Rumour tells of cases in which working such clubs has proved not simply an aid to flagging business, but has actually issued in very lucrative results. The modes of forming and working such clubs will vary with circumstances, but we may briefly indicate the modes of proceeding adopted, as we have been informed in some cases.

The first step to be taken consists in finding a community of persons bound together, or, at least, meeting together, on some common ground. In some cases it is a large workshop or business establishment in which many "hands" are employed; sometimes a school or denominational body: no matter what the bond of union, so long as they meet together and can form compacts for any definite purpose. Next it is necessary to find some influential or representative person in connection with the community in question: if a workshop, then the foreman is a suitable person; if a society or association of any kind, then the secretary. To such representative person overtures should be made, stating the object, and offering some inducement to secure his services in making a contract. A good specimen of this kind of portrait should be ready, and it should be offered to the community at a much lower price than would be charged for such portraits singly. The inducements offered to the foreman, secretary, &c., to undertake the introduction of the idea may take the form of a percentage on the total receipts, or one or more gratuitous portraits of himself or members of his family. It is important to offer tempting terms to this representative, as upon his action depends the formation of the club; and, when formed, he generally undertakes the duty of collecting the money in weekly instalments until the full amount is collected.

We have been presuming that the photographer has his studio handy and easy of access for the members of the club. But that is not always necessary. We have heard of cases where the club portraitist establishes his position, and works out his project far away from his studio; and, having established his club, and secured the names of a number of members, he makes arrangements with the nearest suitable photographer to take the negatives of a given size and style at a fixed rate agreed upon. The negatives are probably card or cabinet negatives suitable for making enlargements, of which the club portraits most frequently consist. In some cases they are enlargements by camera printing on collodion; the film being generally transferred to paper, and cheaply coloured, and placed in

a showy frame, make an effective picture, which can be supplied at a cheap rate.

In a recent issue of the circular "Notes," issued by the Autotype Company, some information is given, and some offers are made to photographers generally which, whilst partaking of the nature of an advertisement, and hence not usually suitable for this part of our column, may prove sufficiently interesting to our readers to justify us quoting some portions. The article, entitled "Portraiture for the Million," says:—

"It is notorious that fresh ground has been broken and successfully cultivated by at least one enterprising firm which has appealed to the million, by offering an attractive article at a cheap rate, and organizing the 'Club Portrait' system in a manner to make payment come easy to the purchaser and sure to the producer. Coloured transfer enlargements hastily coloured and enclosed in cheap showy frames cannot be considered as 'high art,' but they have satisfactorily answered to the demand. They have contented the purchasers, they have enriched the producers, and have thus legitimately fulfilled the conditions of successful trade. If the producer, in addition to the reward of the trader, claimed the renown of the artist, the claim must provoke derision, but, looked at simply as 'business,' the transaction is creditable in itself and deserving of success, as pioneering, however rudely, a new and immense field of work. It shows how the artisan and labourer, the small shopkeeper and the employé, desire to see the features of himself and his family limned by the photographic pencil, coloured, more or less, like life, and in dimensions large enough for framing as a 'joy for ever' on his walls: and how the attainment of this luxury may be brought within easy reach.

"Many photographers object to collodion transfers as teaboardy and trashy productions, unworthy of notice, and have demanded of the Company if Autotype cannot supply a more satisfactory class of portrait. The question has not applied merely to the club portrait, but also in reference to a fairly-painted life-sized head and bust, framed in gold, that might be retailed at four guineas as a family portrait, to content the desires of people who can afford such a price, and yield to the producer of the original negative a respectable profit.

"It is very well known that the 'Club Portrait' is a 10 inch by 8 inch collodion transfer enlargement, coloured in oils, and put in a washable gilt frame, about 14 inches by 12 inches rebate, with a bronze mount, oval or dome cut to 9½ inches by 7½ inches sight size. This is offered complete, and a dozen cartes thrown in, for the sum of thirty shillings. From this total five shillings has to be allowed as commission to the 'traveller,' who enlists the members of the clubs and collects the weekly shillings. Thus a club of thirty members paying but one shilling each per week would require thirty weeks to complete the transaction. Priority of delivery is determined by lot, and with half-a-dozen clubs going, six portraits would be delivered weekly. It may be readily understood that given a portrait which attracts the million, an energetic firm with capital at command, and good organization in many centres of industry at the same time, would be able to do an enormous and profitable trade. Such a firm has the merit of opening a new mine of wealth, but in the nature of things the enterprise must be competitive. A glass house opened in a town for club portraits principally will touch all other forms of the business attainable, will tend to lower prices all round, and the local photographer must prove himself very energetic not to feel adversely the new influence at work.

"The Autotype Company has hitherto aimed exclusively at high-class work, and has, indeed, been sufficiently exercised to meet, without unreasonable delay, the rapid development of its business; but having increased its building accommodation, perfected its plant, utilized artificial light on a large scale, and trained to complete

efficiency a numerous staff, is now able to attend to the wishes of those numerous clients who are desirous of offering a respectably-framed portrait enlargement at the modest figure that will suit the means of the many.

"Experiments have been for some time in progress to produce something new in cheap portraits, and to colour a picture in oils on a carbon base in such a manner that the resemblance should not be injured, nor the general effect staring and vulgar. The artistic part of the business in a very low-priced enlargement, coloured in oils, is the most dangerous. Inevitably such pictures, to pay, must be produced wholesale and rapidly, and photographers know very well how easy it is to spoil a decent enlargement with the brush.

"Rapid colouring without loss of likeness and without vulgarity has been aimed at, and, by a special autotype method, has, it is thought, been secured, so that with instructions as to colour of hair, eyes, and complexion, it will be almost impossible to fail in the likeness. Each portrait will pass through the hands of our Mr. Joseph Wake for final touching, and if the finished picture is a trifle more costly than the collodion transfers in the market, it is intended that it shall be distinctly worth more money.

"The Autotype Company can have nothing to do with any club system. It will produce and supply to its customers from their negatives two distinct portraits, of a certain fashion and fixed price, likely to suit the classes for whom they are intended. Each photographer can decide for himself how best to push their sale in his own district. In towns where the artisan class predominate the club system of weekly payments has distinct advantages; but given the right article to attract the working man's money, the local photographer is in the best position to understand the local conditions of success.

"In furtherance of the object in view, the Company undertakes to supply:—

"First. An Autotype 'Club Portrait,' eight size, 12in. by 10in., head and bust only, full background, fairly coloured in oils, and framed in an effective washable glazed gilt frame, with a bronze mount, cut either oval or dome. The enlargement will be made from negatives only, and the price will be nett eighteen shillings. Copies of positives or Daguerreotypes will not be undertaken.

"Second. An Autotype 'Family Portrait' from negative, eight size, 23in. by 17in., head and bust only, full background, carefully finished in oils, by the Company's special method, and framed in an elegant gold frame. The price will be two guineas, and the retail value fairly double that amount. Copies of paper pictures, &c., will be undertaken for the 'Family Portrait' for one guinea extra.

"The photographer, in cultivating portraiture for the million, must bear in mind the old adage of small profits and quick (or large) returns. With the competition existing in club portraits the usual rate of profit cannot be expected; this branch should be regarded as additional to the regular trade. The expense of carriage must be minimised by arranging for delivery of (say) six portraits at one time. With a larger, and it is hoped better, picture than collodion transfers, a higher price can be got; certainly with a dozen cartes added they should be worth at least thirty-five shillings. Prices vary according to circumstances and locality, and no hard and fast rule can be laid down."

The subject of club portraiture is essentially a commercial one, and many of our readers who are keenly alive to commercial interests probably know more on the subject than any journal can teach them; but to many others the subject will be new; as it affects their trade it cannot fail to interest them. We need no other excuse, therefore, for calling attention to the plan and its modes of working.

FRENCH CORRESPONDENCE.

M. LEON VIDAL ON PHOTOGRAPHY BY THE ELECTRIC LIGHT—ANNOUNCEMENT OF, AND EXPERIMENTS WITH A NEW RAPID PROCESS—GERMEIL-BONNAUD PROCESS FOR PHOTOGRAPHING IN NATURAL COLOURS.

M. Leon Vidal on Photography by the Electric Light.—When I wrote the article entitled "Photography by the Electric Light in a French Court of Justice," I had not the slightest intention of putting my honourable colleague on his defence. In the first place, I had not the right to do so; and in the next place I have said nothing but what is scrupulously exact. My duty was to give a statement of facts, without taking account of what was the opinion of my fellow-worker in his capacity of Editor of the *Moniteur de la Photographie*, for I think I am right in believing that the PHOTOGRAPHIC NEWS would have no business to interfere in the management of another journal. A description of facts which is simply true ought never to become a subject of controversy. But while excusing myself to my readers for continuing a personal discussion, which I am compelled to do, having the right of reply, I would beg my honourable colleague to listen for a short while to the arguments which I advance in the same hospitable columns that he has selected for putting forward his own views. He confesses at the outset that he was in ignorance of any dispute on the subject of taking photographs by the electric light. This is at once an acknowledgment of my being in the right in mentioning the subject, since my aim is to make the readers of the PHOTOGRAPHIC NEWS acquainted with all that takes place here. I was the first to speak of the photographic operations carried on with the electric light, and to describe the fêtes—before the one at the opera house—to which they have given occasion; it was, therefore, nothing but just that I should go on to give an account of the events which followed, without any other considerations than those which influenced my vocations as a conscientious correspondent. To have ignored the question altogether would have been futile. Shortly, but precisely stated, here it is. The Editor of the *Moniteur de la Photographie* wrote an article in which he maintained that the apparatus and fittings used for the electric light at the opera fête were not protected by patent. M. Liebert protested against this statement. These facts I stated in your journal, of which I am a correspondent, and, in face of an action commenced in a court of law, I warned photographers against running the risk of being themselves subject to a similar inconvenience by introducing the Vander Weyde system before a competent decision as to the legal position of the patent rights had been arrived at. Now what could be more correct, or less reprehensible, than this? My honourable colleague excuses himself by saying that he published his account strictly according to the information that he received. Is it my fault if this information be erroneous or incomplete? I notice, with pleasure, his statement; I cannot, however, pass over in silence the censure which is implied—the more so, that the readers of the PHOTOGRAPHIC NEWS will scarcely care to consult the back numbers of that journal to read over again my letter, published on the 27th of June, and sent off from here on the 23rd. The rebuke to which I have laid myself open is, that I have accused my colleague of not having published M. Liebert's letter. The fact is, I merely remarked that such a letter had been sent off, and this I knew for certain, inasmuch as a similar letter, together with a request that it might be inserted, had been forwarded to the other technical journals, such as the *Revue Photographique*, on whose staff I have the honour of being a member. It never could have entered my head to accuse my colleague of such remissness, for the very good reason that the next number of the *Moniteur de la Photographie* after the date of that letter only appeared on the 1st of July. Had

I done so, I should have accomplished the feat of giving an account of an event before it had happened. If I had the power of proclaiming the news of an occurrence a week in advance of its taking place, I should be the most astonishing and most highly sought after correspondent of the entire universe. I cannot possibly allow myself to be supposed to possess an extraordinary faculty which I have, unfortunately for me, not the slightest pretensions to possess. I am not less in perplexity as to another little stricture that is passed on me. My honourable colleague complains that I did not send him a line on the subject of the action at law before I sent an account of it to you. Much as I have ransacked my memory, I find no precedent for a correspondent consulting his colleagues as to the nature of the news which he is going to publish. If all journalists were subject to restraints of that kind, I do not see how they would be able to fulfil their duties; working night and day would not be sufficient for them. Besides, this precaution, even if I had had recourse to it, would have been useless, since M. Leon Vidal confesses that his letters are lost in the post, and that in his case the post is so irregular as to deliver his copy of the PHOTOGRAPHIC NEWS more than a week after date. I content myself, therefore, by thanking my honourable colleague for the explanation he has been so good as to give, and to beg him to accept in good part my regrets for having vexed him unintentionally, at the same time expressing my sincere wish that his postman may for the future be more regular. If he wants it, I will give him all the assistance in my power, in a sincere spirit of good fellowship, to remedy this defect. What should we poor newspaper scribblers do if all our journals and our letters, like the dragoons in one of the pieces of Offenbach, were always to arrive too late?

Notification and Trial of a New Rapid Process.—Great excitement has been caused during the last few days by the announcement of an instantaneous process which is to surpass all other processes yet known. It was stated in the *Petit Journal* that a foreign chemist had arrived in Paris with a method of his own invention, by which he was able to take a negative in two seconds under a cloudy sky. This was a piece of unexpected good fortune. "No more headaches," it was said; "the experiments already made have given most astounding results. In the open air the rapidity of the process is so great that horses can be photographed in full trot, and panoramic views can be taken from a balloon." I have quoted the paragraph word for word. Naturally, my curiosity, as well as that of many other photographers, was vividly aroused by this advertisement, which at the first reading seemed calculated to take one's breath away; and I went at once, in accordance with my duty as a loyal reporter, to obtain more precise information. It did not take me long to learn, on excellent authority, that some experiments had already been made by the newly-arrived benefactor of photography in several of the studios of the city. But it appears that it had very quickly been found necessary to put a damper on the strings of his too brilliant instrument. It was more than exaggeration, for there is some doubt whether the process be even workable; at any rate, it is generally agreed that the rapidity obtained is by no means extraordinary, and that the results are far from coming up to the standard announced by the *Petit Journal*. It must, however, be remembered that a political paper can scarcely be held responsible for its photographic news, published, apparently, in a fit of enthusiasm at a fever heat. We may, I think, say once more, with your great poet, "Much ado about nothing."

The Germeuil-Bonnaud Process for Photographing in Natural Colours.—On several occasions I have brought to the notice of the readers of the PHOTOGRAPHIC NEWS the process of M. Germeuil-Bonnaud for taking coloured photographs, and I also stated that a company for working the process had been formed at Paris. The inventor, however, has not been able to approve the provisional statutes of the company, on account of its being found impossible to

introduce some modifications that he desired, and he is therefore now at liberty to work or distribute licences for working his process as may seem best to himself. He has already sold his patent rights in America. In France, several photographers have seized the opportunity to introduce the process into their own laboratories. I am also glad to be able to inform you that it will soon be available in your own country; an agent of M. Germeuil-Bonnaud has already left for England, and will have full powers for disposing of the licence to work the process there.

K. VERSNAEYEN.

GUP.

"AND what, in the name of gelatino-bromide and artificial lighting, may 'gup' be supposed to mean?" I hear a chorus of those who have never either read Miss Florence Marryat, or luxuriated in the pleasures and pains of Anglo-Indian society, reiterating all round me. "Is it a patent combustible nightlight which burns for ever, and enables us to photograph the details of a shadow in a fraction of a second for a fraction of a farthing? or is it a strictly protected innovation in dry-plate work which we have all been innocently making use of for the last three years? No; 'gup' is none of these things. It is simply an Anglo-Indian abbreviation for 'gossip,' and for facility of pronunciation and extreme lucidity is about as satisfactory an expression as the abode of rajahs and of Messrs. Bourne and Shepherd has as yet contrived to produce.

Moreover, 'gup' is exactly applicable to the present lucubrations. "It expresses what we mean, sirs," as Mr. Terry says in *Little Doctor Faust*, and is obviously a happier title than the "occasional memoranda upon contemporary events of passing interest," or any other such rignmarole that requires a gargantuan mouth to swallow it even piecemeal. Brevity is the soul of wit, my masters, and if the audience gathered to listen to the judicial utterances that emanate from the bench of the New s cannot appreciate the terseness, and, my modesty compels me to add, the vigour, of Chief-Justice "Kaleidoscope's" summing-up, they may go their ways and listen to the long-winded twaddle of Chief-Justice somebody else.

Occasionally writing social articles for a contemporary, and being some time since hard up for a suitable topic, I actually succeeded in evolving a column and a half out of the subject of gossip. One of my "points," I remember, was the distinction that ought to be drawn between gossip, and its ugly half-brother, scandal. I risk the imputation of bad taste in quoting myself, for a reason which I trust my readers will approve. The paragraphic style in which this is written may, perhaps, remind some of other instances in which it is now being widely adopted. Paragraphs even have been, are, and will be the chosen tools of scandal. But in their perusal of the present column, my readers must cast aside all idea of scandal or malicious comment. I have nothing but "gup" to offer you, nothing but light and lightsome gossip upon "the daily round, the common task," of the photographic community at large.

Of course, if folks will persist in going astray, "Kaleidoscope" must follow their example, and shake up his bits of coloured glass into all sorts of distorted shapes, if only to show what an ugly aspect is the natural outcome of a want of harmony. Otherwise, I am of opinion that we shall all agree remarkably well. I am an amateur without the least professional bias; I am not by nature pugnacious; and I am a bit of an enthusiast as regards photography and photographic progress. With this category of virtues, I will now formally introduce to you myself under the name—and "a good name too," isn't it?—of "Kaleidoscope." Beyond this, I shall take the liberty of remaining a photographic Junius, Historicus, Bernal

Osborne, or any other distinguished temporary incog. to whom my polite readers may think fit to compare me.

That was a pathetic letter from Mr Bradforde in last week's NEWS, respecting "bogus" employers; and, in one sense, it was a telling argument in favour of that good institution, the Photographers' Benevolent Association. At the same time, I can't help thinking, in an amateur sort of way, that the Association is of more use to the drones in the photographic hive than to such capable "workers" as Mr. Bradforde.

The above notwithstanding, "Kaleidoscope" will have half-a-sovereign ready if—and I am sure Mr. Harland will thank him for the proviso—nineteen others can be found to make up a "PHOTOGRAPHIC NEWS Subscription" of £10 to the funds of the P.B.A.

I don't feel satisfied that Mr. Bardforde, armed with his letters from his anything but gay deceiver, would be guilty of libel in publishing that—ahem! individual's name; but, doubtless, Mr. Bardforde has satisfied himself on this not unimportant point.

Hurroo! Begorra! Erin mavourneen, slan lath go bragh! Ceade mille failtha (*Anglice*—a hundred thousand welcomes) to the Photographic Society of Ould Ireland, with its broth of a president, whom "Kaleidoscope" doesn't happen to know, but respects and esteems all the same.

In reference to the wide and somewhat prolix discussion about adiactic media ("Kaleidoscope" naturally feels interested in coloured glass), I have seen some orange paper which, steeped in boiled oil, is (so the extremely "rapid" firm of 38, Great Queen Street, tells me) a perfect protection, even for instantaneous gelatine plates, against daylight. It has the additional advantages of giving ample light, and being delightfully cheap.

I want to know when tourist photographers are going to bid farewell at any rate to the bulk of the glass which most of them are forced to carry about with them. Herr Warnerke's tissue is convenient, but it is dearer than the glass which it discards. Mr. Woodbury's plan of transfer is a neat one, but necessitates coating a batch of plates for each day's exposure. The Rev. H. Palmer has made progress with his gelatine films, and Mr. Ferrier has done good work in the same direction. But all this is hardly conclusive. Is it not possible to make a removable sensitive film by first rubbing a glass plate with French chalk, next coating it with plain collodion, then with chrome-almud gelatine (as in Mr. Henry Cooper's substratum), and lastly, with collodion emulsion? Unless I am mistaken, this would be an improvement on Mr. Ferrier's plan, and I regret that time and opportunity are not allowed me to prove or disprove my theory. Perhaps one of my readers will lend a hand and some brains to put this little matter straight.

Can't some intelligent artist make an exhibition instantaneous picture of the crowd thronging to a morning performance of a popular piece? The departure of the Comédie Française has removed, perhaps, the best of all opportunities; but abundance of good ones still remain. A group of old women gossiping over their tea, too, would make a capital picture; it might be called "Gup," and be dedicated to

KALEIDOSCOPE.

APPARATUS EMPLOYED IN THE GELATINO-BROMIDE PROCESS.

BY A. J. JARMAN.

ALREADY I have received a large number of letters asking if I supply plates and emulsion, and what kind of drying-box I use. At present I am not in a position to undertake the manufacture of plates on a large scale, my main

object being to give all the necessary instruction, as far as I am able, so that photographers may prepare their own plates; and I sincerely hope that by following every description that they will succeed as well as I have done.

Fig. 1 gives a sectional view of the drying-box. A is a zinc tube four inches in diameter; B is a zinc tube two inches diameter; C is a small gas jet that burns in the bottom of the tube B, and warms the said tube, thereby causing the air that passes up A to become slightly warmed, and passes over the first shelf of plates, and so on to the bottom of the box, and passes out by the tube B. It will be seen that the air *must* pass through the box before it can

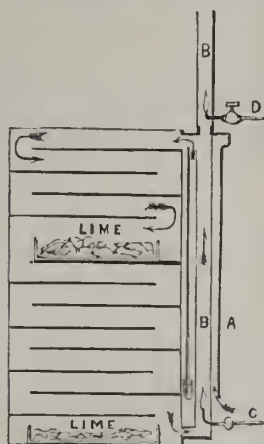


Fig. 1.

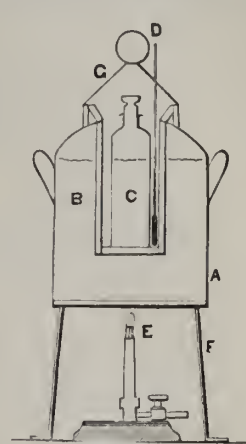


Fig. 2.

supply the gas flame. If cold draught is required, light the top burner, D, and if required to dry spontaneously, then break up some quicklime, about the size of cracking nuts, and three parts fill the two trays shown in sketch; close the door, and in about two days the whole box of plates are nicely dried.

Fig. 2 gives a sectional view of my emulsion kettle. The sketch will explain itself. A is the kettle, B the earthen jar, C the bottle containing the emulsion, D the thermometer, E gas jet, F three-legged iron stand, G is a conical lid, so that a large-necked bottle can be used for the emulsion.

Fig. 3 is exactly the ruby lantern I use. It is made to

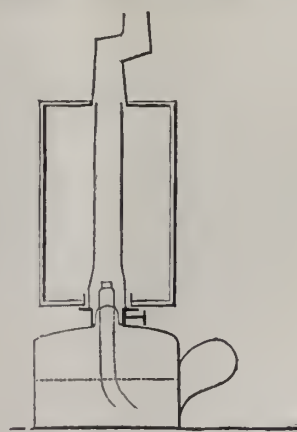


Fig. 3.

rest on the top of a Silber paraffin burner; three sides are fitted with deep ruby glass, six inches by four inches; the back part is fitted with a door; the chimney is that of an ordinary magic lantern, which, by the elbow, stops the light from striking the ceiling of the room.

I sincerely hope the above sketches and description I

have given may prove themselves of value to all photographers who have been seeking practical information for working the gelatino-bromide process.

SIMPLIFICATION OF THE METHOD OF PREPARING GELATINE EMULSION.

BY PHOTO-CHEMICUS.

A DEBT of gratitude is certainly due to your correspondent Mr. Jarman, for the liberal manner in which he has stopped a gap for the benefit of his professional brethren, by his most lucid explanation of the process of preparing and working gelatine emulsion plates. His paper is exactly the right thing at the right time; and, so far from complaining that he has repeated a "thrice told tale," I feel sure that your readers will heartily welcome *any*—even the most trivial—details in connection with a process which, having slumbered for so many years since its invention by Dr. Maddox, has now come suddenly to the front in a manner which threatens to revolutionize the whole practice of photography.

I sincerely trust that every worker in this department will freely add their experiences to those of Mr. Jarman, as they may fully depend that no information they have gained by practice can be too trivial to interest their fellow-workers.

With this feeling, I am induced to add my mite to the common stock. my special object now, being to simplify Mr. Jarman's process for the benefit of brother-amateurs.

The plan I propose involves no outlay for apparatus of any kind, and enables us to carry the whole process nearly through in daylight. It is as follows:—Having prepared, set, cut up, and washed the emulsion (the latter by Wratten and Wainwright's method), I melt it, and pour it into a common stoneware ink bottle, cork this down, and, for still greater security, tie the cork over with leather. I then immerse this in an ordinary saucepan containing water from 90° to 100°. I then bring this out of the dark room into one in which it may be constantly under my observation, and, by means of the smallest possible light from a Bunsen burner (and it is astonishing how little heat is required), keep it for three, four, or five days at the required temperature. Where gas is not available, a night-light, or perhaps even two, under the saucepan answer equally well. Test the temperature occasionally, taking precautions that the heat shall not rise much above 100°, and fill up, as evaporation occurs, with warm water.

When digested sufficiently long, take the jar back into the dark room, and it is ready for use. The jar may be opened at any time, and a plate coated, exposed, and developed, as an experiment. Of course the process may be reversed, and the washing, &c., done after the digestion; but I prefer the former plan.

The question is often asked why the effect of long digestion should be to increase the sensitiveness of the emulsion. The reason appears to be that when first made it is probably a simple solution of gelatine, in which silver bromide is *mechanically* suspended, and that the effect of digestion at increased temperature is to create a *chemical* combination in which silver bromide is no longer the active agent, but a compound of the organic matter, bromine and silver—in fact, what may be called "organo-bromide of silver." Now as, in a general way, organic salts of metals are much more readily decomposed by chemical agents (light being a most powerful one) than inorganic, the silver salt so created is much more readily reduced than the stable silver bromide. Hence each day's digestion renders the solution more sensitive, because every hour is creating more of the triple combination, and (*theoretically*, at least) the most perfect emulsion would be that in which this combination had been carried to its utmost limit; but *practically* this point is not likely to be attained, as decomposition would probably occur before such limit was reached.

FLEXIBLE NEGATIVES.

BY A. W. TURNER.

THERE has long been wanting for many purposes in photography a reliable method of removing the negative film from the glass to an equally transparent, though flexible, support; and having, in the course of some experiments, discovered a simple method by which this result can be obtained, I hasten to make known to your readers, trusting that they will give it a trial to find as much satisfaction in its use as I do myself. Without further parley I will proceed to describe my mode of working.

I take an ordinary varnished and retouched negative, place it in a dish of cold water, and with it a piece of sheet gelatine about a quarter-inch smaller all round than the negative (a sample of which gelatine I enclose to the Editor). Allow this to soak a couple of minutes, until slightly limp; take both out of the water together, and squeeze in a similar manner to ordinary carbon prints, with a piece of india-rubber cloth over it to prevent injury to the gelatine. Now put the negative, with gelatine attached, into another dish containing methylated spirits for a few minutes, to absorb as much of the water from the gelatine as possible. Stand it in a plate-rack to drain, until it is surface dry, which will only take about five minutes or so; then coat with normal collodion, and stand up in a warm room till dry, which will be in the course of an hour or two, when, by gently raising the film with a penknife, it will entirely leave the glass, and you will have a flexible negative as transparent as when on the glass, which can be printed from either side.

I need hardly enlarge on the advantages of this class of negatives, and have only to remind photographers how they can be used for the single transfer carbon process without obtaining reversed images; they can be kept in books like ordinary paper prints, are easily cut, besides a host of other advantages too numerous to mention.

In addition, there is a great saving in expense, as the glass can be used over again as often as you like. Varnished negatives, however old, can be transferred by this means, except when they have been taken on albumenized glass; and even, these if they are only a few days old, are easily removed; but it appears from my experiments that old albumenized negatives become so attached to the glass by the coagulation of the albumen that they cannot be detached by this means; in fact, in one instance, the film actually split, one half coming off on the gelatine, and the other remaining on the glass. This is my experience on this point, but I should like to have some of the results obtained by others with albumenized glass. With other negatives I find the method work without the slightest defect, and, in proof, enclose a few flexible negatives to the Editor, one of which was taken at least five or six years ago.

I must confess I was rather surprised myself at the easy way in which the films can by this means be removed, and can only account for it by the fact that the gelatine when soaked in water expands so much that its contraction in drying is sufficiently strong to overcome the attraction of the collodion film to the glass, which, being in the slightest degree disturbed, of course leaves its original support. The methylated spirits I use to hasten the drying, and the collodion to prevent the gelatine curling up when it leaves the glass; without it the contracting power of the gelatine is so great that it drags the film from the glass before it is dry, and consequently spoils the negative.

I only intend this as a short record of the result of my experiments; and this being now my busiest time, I am forced for the present to lay aside; but any further information on the subject I shall be happy to give your readers, if required, and trust that they will at least give this method a trial.

THE WEATHER: GROANS FROM UNDER THE SKYLIGHT!

BY W. G. SHAW.

COMPLAINTS and grumblings seem to be the order of the day, or, rather, of the year. The drizzling rain and chilly atmosphere of July are perhaps enough to raise a sigh of anxiety even from a patient photographer. As the rain patters on the skylight, and sundry vessels are distributed upon the floor to catch the droppings of a leaky roof, it is little wonder that sitters are scarce and operators wanting situations plentiful.

Our worthy Editor, but a short time ago, alluded to the probability of experiments in artificial lighting being abandoned during the summer (?) months.

Under existing circumstances, photographers will no doubt feel more graciously disposed towards the proposed employment of a system which will enable them to work in a warm and comfortable apartment, instead of under the melancholy expanse of skylight revealing a leaden sky, and emitting sundry and divers unpleasant droppings.

It is an ill wind that blows nobody any good, and it appears as though vendors of rapid dry plates would reap a harvest during the present weather, if there are not too many of them in the market. It is evidently the process of the future, and before long every portraitist will have his own favourite brand. The difficulty to be overcome (if it can be overcome) is the tedious development of emulsion plates, which, after the rapidity of the ordinary process, is trying in the extreme when one is busy, while to let customers go away before developing is a risk somewhat formidable.

Undoubtedly, there is a charm in photographic art by which every true disciple of the camera is held spell-bound. The sentence relative to the late Mr. O. G. Rejlander in last week's News, "But he lived and died a poor man," contains a strangely bewitching pathos. Are there not many unknown ones, many whose picture contains real merit—though they could not be exhibited by the side of his—who have also felt the bitter pinch of poverty? Men with large ambition, good talent, but small capital. Unbusinesslike, it may be, but true artists, nevertheless. It has been said that good artists are muffs at business.

From time to time, trying seasons have thinned the ranks of photographers, and, judging from the number of studios and businesses being advertised, the present period promises to make a rare clearance of those who have grown weary of the smell of collodion. However grand a sentiment may be, one cannot live upon it: neither love for the camera nor "love in a cottage" will avail to satisfy hunger when the cupboard is empty; and as the profession will not suffer by a decrease of its followers, nor the public fail to receive sufficient photographic attention, we would not suggest one word of reproach upon those who contemplate turning their backs upon the studio.

Specially unfortunate, indeed, are our sea-side friends this year. Those who depend upon a good run from June to October are drawing long faces. What visitors are not kept at home by the depression of trade, or economy necessitated thereby, will scarcely be tempted to venture into "lodgings by the sea-side" in weather like this. The present is surely a time for legitimate photographic dodging (I don't mean questionable transactions), and fertile indeed must be the brain of the photographer who can invent some means to induce sitters to visit the studio.

Let us, however, take heart and hope that even yet, before "the harvest is past and the summer ended," some bright genial sunshine may cheer us into good spirits once more, and remembering (by this foretaste) the dreary days of November that may be in store, let us be more than usually careful against indulgence in spirits which are not good, either for our pockets or our brains.

PHOTOGRAPHING THE RACE HORSE IN MOTION.
The San Francisco *Morning Call*, publishing some comments from the East and from Europe on the photographic feat of Mr. Muybridge, says:—

The adage that a genius is never appreciated at home is fairly exemplified in the result of the instantaneous photographing of horses in motion, suggested by Governor Stanford and carried into practice by Muybridge. The idea was a grand one, not alone for its applicability to the purpose which first gave occasion for it, but as it could be made available in so many other ways to advance science and art. It settled questions in relation to the action of horses which had long been in dispute, and startled those who fancied they had an intimate acquaintance with the manner in which a horse handled his feet and legs at a fast trot and gallop.

Those who witnessed the method of accomplishing the object could not cavil at the correctness of it, and a written or verbal explanation to a man of intelligence was generally sufficient to convince him that the pictures were accurate. But the first which were printed, viz., one representation of Occident when trotting fast, was ridiculed by nearly every one, and a New York journal characterized it "as too absurd for belief or comment." That was taken when one fore foot was extended to the utmost point, at the instant it came in contact with the ground, and it looked more like the representation of a horse coming to a sudden stop than the usually accepted ideal of foot motion.

Artists who had made a study of the horse were unanimous in pronouncing it a humbug, though there was an inherent verification to the few who had closely scanned for years the positions of the limbs, and who had closely studied with a view of solving the problem of how to improve the action, in order that the animal might be enabled to go faster. When this picture was taken the machinery was in an imperfect state. Gov. Stanford inquired of Mr. Muybridge if he could photograph the horse in motion. The answer was, Not with the present instruments, but that he thought he might perfect them so as to do it. Several experiments were tried, and the most satisfactory one was a kind of clock-work arrangement, graded to the supposed speed of the horse. This required to be started as the horse came opposite the first camera by hand, and the synchronism between the human eye and hand was not exact enough to give an absolutely correct result. A happy thought—an inspiration, it might be termed—gave the cue to success.

When Governor Stanford struck the last spike which connected San Francisco and New York, the blow resounded over the bay in the booming of cannon simultaneously with the fall of the hammer, and every inhabitant of the city and surrounding country was aware that the long expectant hope was consummated. Upwards of eight hundred miles, across high and rugged mountains, athwart sterile plains and rich valleys interveued, but not even the two-hundredth part of a second marked the interval between the stroke and the report. Why not avail themselves of the agency of the subtle fluid which could thus annihilate space? Fortunately, there was a liberal spirit and abundant means to carry out the suggestion, and the best artisans of San Francisco and England were called upon to perfect the details. Assiduously Muybridge laboured. Whether in the frozen North or among the plantations of Central America, his thoughts were on the future. Could the magician, more potent than ever the wildest imagination pictured, be brought into service, or that which had proved such a boon in other pursuits be successfully evoked? Those who witnessed the operation on that bright June day at Palo Alto can answer that never was a more satisfactory demonstration. The trotter, after being "warmed up," as though he were to start in a race, came whirling by. There was a whizz as the sulky wheels pressed the wires which opened the cameras, and the whole series of twelve pictures were taken in less than the half of a second. Eagerly the small group scrutinized the piece of glass as it was lifted from the bath, in the tinted light which came through the yellow screens. There was the flying steed in every position, transferred with such delicate fidelity that there was a feeling of awe mixed with that of gratification at the marvellous exhibition. Necromancer never accomplished anything to compare with it. A still more arduous task was to give the stride of the race horse with the same perfection. The wheels could not be utilized to release the electrical current, and threads were stretched across, which would break as the animal swept against them. The velocity was greatly accelerated, and the rush was as swift as the flight of an eagle. The record was again on the glass, perfect, though the forms so grotesque that men who had owned and ran race horses for a quarter of a century were staggered at the incongruity—the difference between the real and the imaginary. Here was a new era. The beliefs of the past were

shattered, and new convictions to take the place of long-cherished, though ignorant opinions. Many things could now be explained, heretofore impenetrable, and injuries avoided which before were accepted as inevitable.

The *Call* then gives an account of the tokens of appreciation of his efforts and congratulations on their result received by Mr. Muybridge, not only from foreign correspondents, but from many Eastern gentlemen, and concludes as follows:—

The cartoons representing the fast gallop give a key to the breaking down of so many horses. In trotting, the body is supported by two feet at a time, one fore and one hind foot, carrying the animal along until the bound is made, or very nearly so, probably the hind foot a little later, in order to give the most force. This brings an equable strain and throws the work on both. In running, the hind feet, at one point of the stride, touch, but in the series of eleven pictures, only one shows them in this position. But while there may be a time when both of the fore feet are on the track at once, the cameras, twenty-seven inches apart, failed to record it, therefore the presumption is that one fore leg has to sustain the whole of the weight, animal and rider, while the body is moved along five feet. Just before the foot is elevated, and while it is yet on the ground, a perpendicular from it will strike back of the saddle. This adds to the weight the immense leverage which the head, neck, shoulders, and rider exert, owing to the centre of gravity being thrown so far forward of its support. While this foot is directly under the rider, the weight forces the ankle to the ground. From this it is evident that the tendons must have a terrible tension, and no wonder that the sheathing of them is ruptured.

Correspondence.

GAS-LIGHT PORTRAITURE.

SIR,—Through the application of gas to portraiture by Mr P. M. Laws, no doubt many photographers, with myself, are looking forward to the approach of winter with eager interest. Yea, in the face of such a summer (save the word!) is there not a hope that with Wigham's burner in our studios we might in some measure make up for past losses? But we must first "put our houses in order:" procure one of the large lamps, with all necessary adjuncts, as reflectors, &c. In your admirable article last month you say, "Of course reflectors play an important part in utilizing gas-light for purposes of portraiture, and Mr. Laws has adapted very simple but efficient reflectors." Judging from the softness and general beauty in the lighting of some of Mr. Laws' gas portraits, these reflectors have answered wonderfully well. But would they produce like results in other hands—I mean, of course, would the *average* photographer readily acquire the necessary skill in the manipulation of his three reflectors, top, side, and front light? I rather think not; but if one large reflector were used, successful gas-light portraiture would be easily available for all. As Mr. Laws mentioned recently in your pages, what is required is a properly-constructed reflector that will utilize every ray of light, and be easily adjustable.

If some of your contributors would now give their attention to the subject, we might have the desired reflector in our studios in time for the winter harvest.—Yours truly,

WILLIAM THWAITES.

MASTERS AND MEN.

SIR,—Allow me a brief space in retaliation of last week's remarks, made by a would be operator who styles himself by that name; in name only, as I have too often found to my great sorrow and disappointment, during the time I have been in business. Unfortunately, too, their name is legion, a disgrace to the profession. Such men as those who formerly obtained employment on the stage or music halls, but who know no more of the business than a school boy. These are the men who ruin our trade, who drive customers from our door by their vilifying pretensions to photography. I

will also refer to their drunken habits. The bare idea of a man engaging himself to fill a respectable situation as first-class operator and retoucher, coming into the shop in a state of drunkenness, trying to extort money from the mistress of the establishment before even entering on the duties allotted to him. I could tire my readers with the many cases of this sort which I have been brought into contact with since I commenced business, and those who have been similarly tried can sympathise with me.

Having gained a name and reputation in the old city to which I belong, I do not feel disposed to sacrifice it for the sake of those swindlers—for they deserve no better name—and only now can I say, after many years of trouble and annoyance, have I found an efficient operator, one who is master of the art, whose services I can appreciate.—Yours, &c.,

EXONIAN.

To Correspondents.

PHOTO.—The general proportions and plan of your projected studio are very good. The best side light is one facing north, illuminating the sitter with north light. No. 1 will be the most useful lens.

BEGINNER.—There is probably no operation in photography more easy and simple than the production of ferrotypes, and we should recommend any operator to master the details. They are chiefly required in cheap businesses, and are probably rarely in demand in first-class studios. Most of the good negative collodions now in use may be employed in ferrotype work.

GLAZING PRINTS.—A correspondent, whose letter is mislaid, asks what is applied to prints, previous to rolling, to secure the very high gloss he sometimes sees. We presume that he refers to the surface produced by what is called enamelling. The effect of wax and encaustic pastes is to give a polish to the surface of the finished print, and also to preserve it from the action of a moist atmosphere; but they do not produce that glass-like surface which is obtained by the enamelling process. It would require too much space to describe in this column the process of enamelling, but we may briefly indicate its nature. A piece of plate glass is well cleaned, and then polished with bees' wax. It is then coated with a thick, tough, uniodized collodion. When dry, this is coated with solution of gelatine, which is allowed to set—or, as some prefer it, to set, and thoroughly dry. The prints, having been properly washed, are placed, whilst wet, face down upon the gelatine, and all air-bubbles and water carefully squeezed out. The prints are left to dry, when they will curl off the glass, or easily lift off, and bring with them the gelatine and collodion films, and present that glassy surface which many admire. It is, we think, an improvement to small pictures, but its application to larger prints is of doubtful value. It is probable that it conduces to permanency.

G. F. L. M.—Various methods may be employed in developing paper prints. Some immerse them in a dish of the developing solution. Some float the print, as the paper was originally floated, on the silver solution in sensitizing. A good plan consists in turning up the edges of the exposed paper, and binding them at the corner by means of an American clip, so as to form a dish. The developer is then poured into this dish with a rapid sweep, so as to cover the surface as quickly as possible, and is then rapidly distributed over the print by means of a Blanchard brush, consisting of a piece of swan's-down cotton tied over the end of a stout strip of glass. Some operators use such a brush for applying the silver solution in sensitizing, and use the same brush in developing to such parts of the print as may require to be a little darker, the silver it retains mingling with the developer to give greater intensity. As a rule, a saturated solution of gallic acid is used for development. If a plain silver solution were employed in sensitizing the paper, a little acetic acid is added to the developer; but if acetic acid have been added to the silver bath, none is required with the developer. A saturated solution of gallic acid is made by dissolving it in hot water, at the rate of about five grams to each ounce of water. The discolouration of which you complain is often caused by plunging the developed print into the hypo fixing bath without previously washing well.

FACTOTUM.—As a rule, an operator is not called upon to print; but if he is wise he will willingly do anything in any department of the business that he is able, from cleaning a plate to retouching a negative, from printing a vignette to applying encaustic paste to the finished print.

Several correspondents in our next.

The Photographic News, August 1, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

FORGERIES AND PHOTOGRAPHY—ADVERTISERS AND PERSISTENCE OF VISION—YELLOWNESS IN ALBUMENIZED PAPER.

Forgeries and Photography.—The recent forgeries on the Bank of England bring us back to the subject of detecting such doings by means of the camera. The falsifications in this case were made upon cheques issued by the Bank of England, which, as our readers are aware, bear no coloured printing at all. They are simply black and white. But they are very delicately engraved, and this is held by many to be a better safeguard than the employment of tints of various colours. These, of course, were introduced for the purpose of preventing reproductions being made by the aid of the camera; but since the discovery was made, two years ago, that the blue bank notes of the Bank of France offer little difficulty to the ingenious photographer, it is obvious that colours are not the safeguard that is supposed. Indeed, in the opinion of many, the printing of a tint upon a cheque or valuable paper is a source of weakness, rather than of strength. When a document in black and white has to be imitated, it is necessary that the imitation should be a perfect one, otherwise the fraud is at once detected; but if colours are introduced, these may be made to cover the imperfections of the forgery in a measure, and thus serve to cloak clumsy execution. In the present case, however, it is no fraudulent manufacture of a cheque that is in question, but rather the removal of characters in ink, and substituting others. A portmanteau has fallen into the hands of the police, containing, we are told, the necessary chemicals and implements for making these changes. The chemicals referred to were, no doubt, oxalic acid (or salts of sorrel, as it is generally called), or, perhaps, citric acid, but very great care would be necessary in the employment of these, if detection is not to ensue; for before paying a heavy sum in favour of a person who does not usually draw large amounts, there is, we presume, some amount of caution exercised by a banker's clerk. The removal of an ink stain from the surface of paper must be very cleverly managed if it is not to leave a stain behind, and we doubt whether any means short of immersing the document in liquid would be successful. In this case it would be necessary for the forger to protect the signature, and, possibly, also the date, but this could be done, possibly, by the use of a pale varnish. But do it in any way he chose, we do not see how he could possibly evade detection if such a document were passed for examination into the photographer's department, like that established in Paris, in the Bank of France. A collodion picture, quickly taken, of a cheque so treated would at once show inequalities over the surface, and if the slightest stain of the yellow iron solution remained, this would be rendered particularly apparent. So that photography, instead of being an enemy to bankers, as these naturally expected, turns out to be capable of furnishing them with a means of detection much more delicate than the eye of an experienced cashier. If varnish, or any protective coating, had been but partly applied to a cheque, evidence of it would be at once furnished by the camera, while, as we know, the slightest crasure becomes at once apparent. Moreover, if a figure or character has been erased to the eye, it by no means follows that the camera cannot see it. Any photographer who has copied a portrait which has been at one time or other enclosed in a letter knows this. The face of the print may be white and spotless, and yet, when a copy is made in the camera, there are to be seen crossing the face of the picture a startling imprint from the writing which was for some time in contact. Several examples of this have come under our notice, and the defects in most cases

are so glaring that they quite spoil the reproduced photograph.

Advertisers and Persistence of Vision.—The study of persistence of vision is decidedly interesting in itself, and by the photographer it has frequently served as a pastime. Herr Ball's recent investigations upon the visual purple of the eye, the results of which prove that not only is the human retina impressed with an object in a photographic sense (if the object is seen long enough), but that there is behind the purple film another tissue, which acts as a resensitizer, have interested photographers a good deal, as it is only natural they should do. In fact, photographers must obviously feel an interest in all which pertains to optics and to the impression of colours, either upon organic or inorganic films. Perhaps that is the reason why an extensive advertiser has bethought himself to blend optical science with publicity. The idea is a happy one, both in design and execution, for as the object of all advertisers is to impress themselves on the public, if this can be done in carrying out a scientific experiment, the impression is likely to last all the longer. Mr. Buggins Brown has therefore hit upon this clever expedient. He prints a block of shining red, and below it is an empty space of white. In the middle of the red square appears in white the name Buggins Brown, and if you look at this red square with the white letters in a good light for twenty seconds (so runs the advertisement), you will afterwards see in the blank space below a square of bluish-green with the name Buggins Brown in white. Green being, of course, the complementary colour to red, the eye would naturally see the former after it had been fixed firmly for some time on the latter pigment; but whether in the advertisement in question matters are so well arranged as to permit the illusion, we do not know, since we had no desire to gaze upon the name of Buggins Brown in its inflamed setting for a period of twenty seconds. Notwithstanding the lucid explanation, we rather doubt it. But probably it is of little moment, after all, to Mr. Buggins Brown whether you have seen his name thus transposed or not, so long as he has prevailed upon you to stare at the red square for a full third of a minute. Nay, the ingenious inventor himself rather betrays a lack of belief in the scientific phenomenon, for beside the blank space, if he should see nothing else, he will read these words: "There are some few persons to whom exceptionally these phenomena will *not* be apparent, they are assured that no foolish trick has been attempted." The affair reminds one strangely of Mr. Toole's peepshow, which that excellent comedian shows upon occasions; to the spectator who looks bewildered into the empty box in the vain endeavour to obtain a glance of "the lowest dungeon of the castle keep," it is coolly explained, "You will observe the dungeon is a perfect cell."

Yellowness in Albumenized Paper.—It would be interesting to know whether a pigment, or tint, could not be added to albumenized papers for the purpose of correcting the yellowness with which time, apart from any influence of silver, impresses it. A purely-white albumenized paper, if exposed to direct sunlight for a few months (before being sensitized), not unfrequently assumes a yellowish, or, at any rate, a dingy tint. This may be due to the sulphur contained in the albumen becoming attacked by vapours of one kind or another, or by the bleaching compound that has been used being acted upon. Whatever the cause, many albumenized papers certainly do become *defraichi*, or robbed of their freshness, by exposure to air and light, and it would be well worth the attention of manufacturers to see if this could not be counteracted in some way. In the manufacture of pigment tissues, measures have to be taken to render the slight yellowish-brown tint of the insoluble chromate invisible, and in the same way, we think, a pigment might be added in minute quantity to neutralize such change as the albumenized paper undergoes in its normal condition.

SOME EXPERIMENTS WITH THE RARER SALTS OF SILVER.

BY DR. GUIDO WOLFRAM.*

In all the works to which I have access, I have been able to find very little information as to the photographic properties of silver fluoride, while the chlorate and perchlorate of silver do not appear as yet to have been used at all for photographic purposes. Hallem, in his treatise on the "Art of Photography" (page 74), states that silver fluoride, like silver nitrate, undergoes but little alteration under exposure to light; but that, in combination with silver bromide, it appreciably raises the sensitiveness of the latter, especially when sodium fluoride is used in preparing it. He soaked some paper in a solution of potassium bromide and sodium fluoride, dried it, and silvered it, and then rinsed it well with water. By exposure in the camera, and development with iron sulphate, he obtained pictures.

In the same way as Hallem, G. Wharton Simpson (*Photographische Mittheilungen* VI., page 313), Sir J. Herschel, and Robert, have attempted to take photographs with silver fluoride in combination with silver bromide. Blanquard Eyraud found that albumen plates containing the iodide and fluoride of silver were so excessively sensitive that he was able to take instantaneous photographs with them; he also observed that under similar circumstances silver iodide alone was sixty times less sensitive to light. Wharton Simpson soaked a piece of paper in a 50-grain solution of silver fluoride (how he prepared it is not stated), and exposed it in conjunction with two other papers coated with chloride of silver collodion to direct sunlight; the silver fluoride paper exhibited in five minutes scarcely as much change of colour as the others in one minute. Of papers prepared in the same way, exposed for a minute to diffused daylight, and subsequently immersed in a saturated solution of pyrogallie acid, the silver chloride papers turned a light-brown colour, but the silver fluoride papers showed a splendid chestnut brown. For this reason Simpson recommends silver fluoride for taking enlargements.

In H. Vogel's "Manual of Photography," page 128, it is stated that silver fluoride undergoes a change even in the yellow. The January number of the *Photographische Correspondenz* for 1878 contains an article by Husnik entitled "Collotype in Natural Colours," in which there are some remarks on the sensitiveness of silver fluoride. Husnik states that he has found the iodide, bromide, chloride, and fluoride of silver to be sensitive to all rays after a short pre-exposure. The salts of fluorine must be used in such a way that only sodium fluoride comes into contact with the iodide, bromide, and chloride of the same metal, inasmuch as the salts of the other metals give insoluble compounds with it. Husnik's process appears to consist in dissolving these four salts (either together or separately) in collodion, and then by acting on it with a solution of nitrate of silver to produce the corresponding haloid salts of silver. Independently, however, of the difficulty of introducing silver fluoride into collodion on account of its comparative insolubility in alcohol, it is quite impossible to obtain the salt by the method indicated. Soluble salts of fluorine give no precipitate with silver nitrate, for fluoride of silver dissolves readily; there is also no conversion of the two salts into sodium nitrate and silver fluoride, for when brought together they remain side by side unchanged.

Silver fluoride is best prepared by dissolving silver oxide or carbonate in hydrofluoric acid; by evaporating the liquid we get the unstable and, as Berzelius showed (*Poggendorf's Annalen*, I. 35), the highly deliquescent salt. It is as difficult to obtain the chlorate and perchlorate of silver, as the silver fluoride, if the plan be adopted of acting on silver nitrate by the respective alkaline salts.

These two salts are also both highly soluble, and are best prepared by dissolving silver oxide or silver carbonate in chloric and perchloric acid respectively, or by the double decomposition of the barium salts acting on silver sulphate. If pieces of Rive paper in an unfinished condition be soaked in silver fluoride, and in chlorate, perchlorate, or nitrate of silver, the first will turn a light brown colour still floating on the fluoride solution, while those soaked in the other salts remain white after drying. The silver fluoride paper changes colour when exposed to light, quicker than the other three, and those three take the same time to darken. A reduction of the chlorate and of the perchlorate of silver to the chloride does not appear to take place in the substance of the paper itself, or the colouring would become more intense. Under red and yellow glass the silver fluoride paper does not change colour any more than the other papers. Paper soaked in solution of silver fluoride or nitrate, dried, and then washed with pyrogallie acid, turns a deep chestnut brown, even without exposure to light. The production of pictures in the manner proposed by Wharton Simpson is therefore not possible.

Attempts to replace silver nitrate by one of these more soluble salts for the sake of shortening the time of exposure were not successful. Silver chloride, chlorate, and perchlorate employed as sensitizers for silver iodo-bromide neither effected a decrease in the time of exposure, nor showed any other advantage over silver nitrate. With the first two salts very good negatives were produced by the help of an acid iron developer; with the last-named—silver perchlorate—notwithstanding strong acidulation with nitric acid, the reduction of the salt was so rapid that the plates were covered with a dense veil.

As I have above stated, when sodium fluoride and silver nitrate are brought together, a double decomposition does not take place. Although in the majority of cases it is impossible for the chemist to prove whether a double decomposition has taken place or not when two soluble salts are mixed together without producing a precipitate, in the present instance the greater sensitiveness of silver fluoride shows at once that the two salts exist side by side in an unaltered condition. If paper be soaked in a mixture of sodium fluoride and silver nitrate, or be first treated with sodium fluoride, and, after drying, with silver nitrate, the result is a paper of the same degree of sensitiveness as one soaked in silver nitrate alone. For this reason Hallem found the sensitiveness of his supposed silver fluoride to be as great as that of silver nitrate.

A mixture of potassium chlorate and silver nitrate could not be distinguished from silver chloride by the test of the sensitiveness of the papers treated with those salts. But I have succeeded in finding for this case also a reaction by means of which the difference between the two solutions can very clearly be shown, and by which it can be proved that a double decomposition does not take place. From a mixture of potassium chlorate and silver nitrate, silver nitrate is thrown down in the form of a reddish yellow precipitate by means of potassium nitrite; whereas a solution of silver chlorate is reduced by the same reagent to silver chloride. In the first case the precipitate is soluble in nitric acid, nitrous acid being given off; while in the second case the precipitate is insoluble in nitric acid.

The results of the experiments above-described go to demonstrate:—(1.) That a mixture of a solution of sodium fluoride, or of potassium chlorate or per-chlorate, with one of silver nitrate, will not produce silver fluoride nor silver chlorate or per-chlorate. 2. That silver fluoride in the presence of organic reducing substances is more sensitive to light than silver chlorate, per-chlorate, or nitrate. 3. That silver fluoride, chlorate, or per-chlorate, when employed as sensitizers of silver iodo-bromide, neither decrease the length of exposure, nor offer any other advantage over silver nitrate. 4. That silver fluoride has not been observed to possess sensitiveness to the yellow rays.

* *Photographische Mittheilungen.*

PHOTOGRAPHY AS APPLIED TO THE REPRODUCTION OF PLANS AND DRAWINGS.

BY DAVID TOWNSEND, B.S.*

2. *Sensitizing.*—We now come to the second operation, namely, sensitizing, or applying a substance which will be affected by the light. In this case we use nitrate of silver, the theory being that when the salt in the paper comes in contact with a solution containing the nitrate, chloride of silver is precipitated, which forms an exceedingly sensitive surface, in the presence of an excess of nitrate of silver and organic matter.

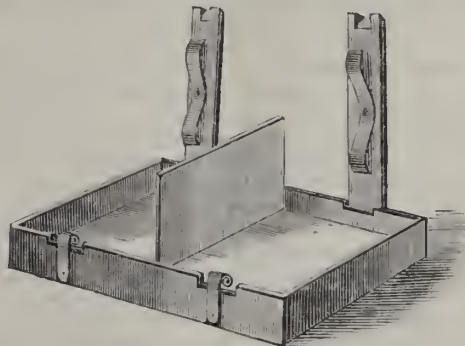
The silver bath consists of:—

Cryst. silver nitrate	...	...	...	1 part.
Citric acid	...	...	...	$\frac{1}{2}$ "
Alcohol,	...	...	...	1 "
Distilled water	...	...	...	10 parts

The pure crystallized nitrate of silver is dissolved in one portion of the water, the citric acid in another, and the solutions added, together with the alcohol. Paper sensitized with this bath will keep unaltered for months, whereas, if only nitrate of silver and water had been used, it would turn yellow in a short time. Enough of the bath should be made up to float the paper without touching the bottom of the pan. The vessel in which the sensitizing is performed consists of a tin pan, thickly painted with asphalt, which, when dry, is coated by means of a brush with melted wax. This, when cold, forms a good lining which is not in the least affected by the silver, and which does not affect or contaminate it. I have used such a pan for months without any perceptible change in either the pan or bath. This forms a cheap and desirable substitute for porcelain, which would be difficult to get sufficiently large. The manipulation of the paper is the same as described under the head of salting, being shortly as follows:—The paper is taken at two opposite corners and bent evenly without making any creases or breaks. It is then held over the bath and lowered gently until it touches the liquid. One corner is then lowered until half the paper lies on the bath, then the other is treated likewise. The paper should always be rolled with the salted side out, otherwise the edges will dip into the bath on floating it, and cause spots on the back. When the paper is very large it is necessary to have an assistant to prepare it properly. If any bubbles appear under the paper, they must be carefully removed with a glass rod; but when the sheets are large, it will be more convenient to touch the spots with a clean brush moistened with the solution on taking the paper off the bath. The paper is allowed to float for one minute in winter, and forty to forty-five seconds in summer. The temperature of the bath is also important, because if it be ice-cold, sensitizing will proceed very slowly; therefore it is best to warm the liquid slightly in very cold weather. The paper is just the opposite, as it keeps best when cold. Sensitizing should be performed in a dark room, photographically speaking; that is, in a room lighted only by such colors as have no actinic action on sensitive substances, such as red, orange, or yellow. My own laboratory is arranged with heavy yellow shades, put on rollers which slide in grooves; thus I can have actinic or non-actinic light at pleasure by simply raising or lowering the shades. It would be well to have such an arrangement, as all the operations to the final washing require to be performed in non-actinic light. Care should be taken not to let the silver solution wet the back of the paper, and to avoid touching it with unclean fingers, as black spots will appear when the sheet is exposed, and mar the beauty of the drawing. When the paper is sufficiently sensitized, it is drawn carefully from the bath, and suspended from a line, by compression pins, to dry. A piece of blotting-paper should be placed under it to catch the silver solution which drops off, and which may be regained. The silver bath should be occasionally tested for strength, and, if weak, the proper

amount of new nitrate added. It may also become cloudy, due to organic matter, but this may be removed by adding a few drops of potassium permanganate in water (1 to 100), or until a faint pink colour is produced, then putting it in the sunlight for several hours. Silver stains on the hands may be removed by rubbing them with cyanide of potassium and water; but as this salt is a deadly poison it should be used with great care.

3. *Exposing.*—Next is the exposing of the prepared sensitive paper to the action of light, under a drawing, in order to produce a copy. The theory of the operation has been explained; it is carried out in what is known as the printing-frame (fig. 1). This consists of a wooden box having four shallow sides, two to four inches in height, the front being a piece of plate glass, fitting in the frame, and the back (C) consisting of two pieces provided with hinges



so that either side may be opened without disturbing the other. The back is pressed tightly against the glass by means of a couple of springs (A and B) fastened on two cross-pieces of wood held by catches and hinges to the frame. To the back is glued a soft piece of Canton flannel, which presses against the glass. These frames may be procured ready made from three by four inches up to twenty by twenty-four inches, and other sizes may be had to order. The frame is carried into the dark room, the back removed, and the drawing, if on tracing-paper, is put in with its right side against the glass; the sheet of prepared paper is then placed with its sensitive side against the back of the drawing; two or three thicknesses of Canton flannel are next laid in, and then, after making all as smooth as possible, the back is replaced, and the springs shut. If, on turning it over, any wrinkles appear, that side of the frame is re-opened, and a piece of paper put against the spot, when all will come smooth on again closing the frame. The frame is now carried into the light, and left until the paper turns brown, which it will do in a short time. It is then carried back and opened, or, if not in sunlight, it may be quickly examined without taking it to the dark room. If all the lines are still white, it must be closed, and again exposed to light; but if the white lines are slightly brown, the exposure is sufficient. In every case the print should be over-exposed, as it fades considerably in the subsequent operations. No special directions need be given in regard to time, as it varies considerably, and is, besides, easily controlled. The picture produced will be a positive, or like the original, except it will have white lines on a dark ground. In order to produce dark lines on a white ground, two prints are required to be made, one reversed, which is finished and then used as a negative to produce the desired positive. Drawings made on tracing cloth may be printed either as positive or negative at will; but where the original is on regular drawing paper, a negative only can be produced, owing to the thickness of the paper. Originals made on paper that is soiled, or yellow from age, cannot be copied, because the colour makes them non-actinic. It would be well to remember that the more opaque the lines of the

* Continued from page 341.

original, the better will be the copy, therefore we make use of the non-actinic properties of certain colours, and mix brown, vermilion, or yellow with the Indian ink used in making the drawing. It is a good plan in large establishments, where a great many copies of one drawing are required, to pencil the original on paper, and finish only the tracing, which may be kept as a negative to reproduce any number of copies. My own experience has been that tracing cloth is much better than paper, as it is less liable to tear or wrinkle, and gives more accurate results.

4. *Washing*.—After obtaining a sufficient exposure, as directed above, the frame is brought into the dark room, and the picture removed; it is then put in a pan of sufficient size, arranged so that water may run in at one side and out at the other, and left until the water becomes clear. If this cannot be conveniently accomplished, it is placed in a pan and the water changed four times. Now, as all the parts protected from the light still contain nitrate of silver, this will be dissolved in the water, and it becomes a matter of economy to recover it. When the print is small, the water may be preserved in a keg, and the silver extracted at leisure; but where running water is used, other means must be resorted to. The easiest way is to place two old felt hats, each containing a handful of common salt, under the exit pipe, when the silver, in passing through the salt, will be precipitated as chloride, and caught in the fibres of the felt. In the course of time the hats will become saturated, and may then be dried, burned, and the silver extracted. The next two operations, viz. (5) toning and (6) washing, are seldom performed for copying drawings, but the print is immediately fixed after being washed. For very fine line engravings, or for copying photographs, they are important, and so I will describe them.

(To be continued.)

PHOTOGRAPHY IN COURT.

The following cases, in which photography appears in Court, may interest our readers.

THE PHOTOGRAPHER AND HIS TRAVELLER.

Furrier v. Hudson.

This was a claim for £17 10s. for wages and expenses. Plaintiff is a traveller, of Walworth, and defendant is a watch-maker, of Ely Place, Holborn, and also trades under the title of "The Cornhill Photographic Company."

Mr. Batts appeared for the plaintiff.

Previous to the commencement of the latter business defendant advertised for travellers. Plaintiff communicated with the defendant, and the result of that communication was that plaintiff was engaged as traveller, his principal duty being to find agents who would undertake the formation of clubs. For performing this work he was to receive a salary of £10 per month, payable weekly, with an extra allowance of 18s. per week for expenses. Plaintiff's wages and expenses were paid in accordance with this agreement up till the 10th May. On that date he called as usual, and found the defendant out, his salary being left, minus the "expenses." The same course was adopted on two or three subsequent occasions, and in answer to plaintiff's remonstrances, the defendant wrote to him, stating that as his efforts in the business had not been attended with the least result, his services would be no longer required. Plaintiff responded to that communication, expressing his surprise, as he had conscientiously endeavoured to do all he could for the defendant's business.

In answer to his Honour defendant said he had refused to pay this amount because plaintiff had obtained the situation by false representation. He (defendant) had been given to understand that the plaintiff had failed in business, and had paid fifteen shillings in the pound.

His Honour: Do you call that a recommendation?

The Defendant: Yes.

His Honour: Well, I suppose it is a good recommendation in these days.

The Defendant: We are not inclined to judge of a man harshly who—

His Honour: Who does not pay his debts?

The Defendant: No; a man who has struggled hard to pay a good dividend. Defendant further said that the plaintiff had attended races instead of trying to obtain agents.

His Honour said attending races was not in opposition to his agreement. He should have thought that racecourses were very good "touting-places."

The defendant said plaintiff went to the Alexandra Palace races on at least two occasions.

His Honour: And what other places? Did he go to the Crystal Palace. (Laughter).

Plaintiff denied that statement. He went to the boat race, and received the defendant's assent to go.

His Honour said the plaintiff had not guaranteed to the defendant that he would succeed. All he had undertaken was to "tout" for them. He had done his best, though he had failed, and therefore judgment must be in the plaintiff's favour, with costs.

Judgment accordingly.

THE PECKHAM RYE PHOTOGRAPHER.

William Hambly, 34, photographer, was indicted for an infringement of the bye-laws for the regulations of Peckham Rye, by keeping a photographic apparatus on the common on Sundays, contrary to the regulations of the Camberwell Vestry. It appeared that the defendant held a licence from the Vestry to keep this photographic apparatus on the Rye for six days a week, but he insisted upon occupying the common on Sundays also. To this the Vestry objected; but as the bye-laws provided no penalty in case of infringement, they were compelled to proceed against the defendant by an indictment in common law.

Mr. Lilley, for the defendant, raised a question as to the right of the Vestry to make bye-laws, but his objection was overruled by the chairman, who declined to grant a case for a superior court.

The jury, by direction of the Court, returned a verdict of guilty, and the chairman said, as the object of the Vestry was simply to restrain the defendant from infringing their bye-laws, the Court would not inflict any punishment, but simply order him to enter into recognizances to come up for judgment when called upon. Of course, if he again offended, a penalty would be inflicted.

The *South London Press* has the following remarks on the above case:—

An important case has just been heard at the Surrey Sessions. For some time past the Camberwell authorities have been set at defiance by certain members of the vagabond class who persisted in taking possession of Peckham Rye, to the detriment of the public, which resorts there for recreation and amusement. The inspector appointed by the Vestry was quite unable to restrain the rough element within moderate limits, and so serious did the nuisance become, that an impression got abroad that the Vestry was altogether powerless to exercise any authority over the management of the Rye. This impression was brought about partly by a commendable leniency on the part of the Vestry, but more directly through the influence of certain members of that body, who were imprudent enough to express a doubt as to the legal power of the Vestry to enforce the bye-laws it had made. Under these circumstances, no option was left to the authorities but to assert its power; and this it has now done in the most complete and successful manner. It is perhaps to be regretted that the person proceeded against was not the most notorious nor the most objectionable offender. For some time past, the person prosecuted has carried on, with more or less success, the business of photography on Peckham Rye. He held a licence from the Vestry to carry on his trade six days in the week; and, in an evil hour for himself, he was persuaded that the licence was nothing worth, and that he could continue his business on the seventh day without let or hindrance. With this conviction strong in his mind, there is some excuse for his conduct, for Sunday, doubtless, offers the largest scope for business, when the lads and lassies in their "Sunday best" fall an easy prey to his seductive appeals. The finding of the jury on Tuesday last, which brought him in guilty of a breach of the bye-laws of the Vestry, will doubtless act as a salutary deterrent to other offenders; but should the judgment fail to influence the conduct of roughs who at present set the law at defiance, we trust the authorities will act promptly in the matter. The recent decision has clearly established the Vestry's title and the legality of their bye-laws, and these are points gained in the interest of all who desire our open spaces utilized for the benefit and recreation of the people.

PRINTING PERPLEXITIES.

BY H. C. BRIDLE.*

HAVING been applied to frequently during the last two months to give some method for preventing the albumen softening, and leaving the paper during the fixing or washing, I thought a few words on the subject might be useful to some of your numerous readers. To make the matter perfectly intelligible, I will describe the whole process of silvering, toning, &c.

First, as to the treatment of paper. Keep the paper

* *The Philadelphia Photographer.*

from twelve to twenty-four hours before silvering in a damp, cool place. This applies to every brand of albumen paper. It gives greater ease in silvering. The paper will take the silver better, and will also lessen the tendency to blisters to which the "Brilliant" papers are especially liable. Prepare a plain silver solution—

Nitrate silver	...	...	...	35 grains
Pure water	...	...	...	1 ounce

Test with litmus paper. It should be just alkaline. If it is not, make it so by adding a few drops of dilute ammonia, till the pink litmus-paper just, and only just, turns blue. Float the paper sixty seconds; draw over a glass rod. Carefully examine the first sheet you silver each day, as it begins to get surface dry. If it looks as though the surface was greasy, reduce the strength of your silver solution. Dry as quickly as possible. Fume with ammonia until the paper prints a rich purple. Ten minutes will probably be sufficient. Be sure that, when the paper is once dry after silvering, it does not get damp again until it goes into the washing. In damp weather, see that the fuming-box is dry. If damp, light a lamp, and leave it burning in the box for a quarter or half-an-hour before putting in the paper. The paper should show a little, but very little, bronzing in the deep shadows when fully printed under a good negative. When the printing is finished for the day, proceed to tone. Place the prints one by one in water made slightly acid, and leave them till they begin to lose the blue colour. Pass them through at least three changes of water, and then into the toning-dish. Use any good formula for toning. I prefer the sal soda bath, made every day about half-an-hour before you want to use it. The prints should tone in about six minutes, certainly not longer than twelve to fifteen. Tone till the lights look rather blue, and then place the prints in a dish of water till all are toned. Now proceed to fix. See that the hypo is not acid. It should be neutral, or even slightly alkaline. The hypo should be made up fresh every day, especially during the summer.

Drain the prints well from the hypo, and place in strong solution of salt for five minutes, moving them about all the time, and then putting them in running water for three hours. It is better to make the hypo and salt solution two or three hours before using it, as both hypo and salt make the water several degrees colder. The neglect of this is one common cause of blisters, &c. Any of the American brands of paper will work and give good results if this method is adhered to. The German "Brilliant," such as the "Dresden Brilliant," "S. and M. Brilliant," or "Cross-sword Brilliant," will need a stronger silver solution, especially if the solution is new, as a new bath needs to be at least five grains per ounce stronger than an old bath to give good results. If the German "Brilliant" paper is silvered on a new bath of not more than thirty-five grains strength, it is quite probable the albumen will soften and rub off. If this does occur, strengthen the bath by adding more silver. Test the strength of the solution every day. Do not use the hydrometer, but use "Pile's Test-tube." This is the only reliable means of testing the strength of silver solution. The hydrometer registers everything that is held in solution, while the "Pile's Test" only takes account of the quantity of silver in solution.

Doubtless to the larger portion of the readers of your valuable journal there will be nothing of service in this letter. The desire to benefit those who have had but little experience in this very important branch of our business must be my excuse for occupying so much of your space.

MEASURING DAYLIGHT.

THE *Times*, speaking of the importance of registering the variations of daylight, says:—"It is greatly to be desired

that a good and simple method may be found of recording and measuring with some accuracy the variations of daylight throughout the day. This would render the weather record more complete, and it has an important special bearing on plant physiology. An attempt of the kind has lately been made by a German, Herr Kreusler, who has had made for him, by Liebertz, in Bonn, an apparatus with the following arrangement: It consists of a drum fixed with its axis in the plane of the meridian, and adjustable so as to be at right angles to the sun's rays. This drum has its border divided into twenty-four hours, twelve noon, twelve midnight being in meridian plane. A strip of paper, sensitised with solution of bichromate of potassium, and having divisions which correspond to those on the drum, is placed round this. A second drum closely surrounds the first, and is turned by clockwork (from which it can be detached) once in twenty-four hours, in the direction of the sun's apparent course. This second drum has a slit for admitting light to the paper; its width is such that any point on the paper is exposed twenty seconds as the slit passes over. The whole apparatus is placed in the open air under a glass bell-jar. Its arrangements give little trouble: the paper strip has merely to be placed in its proper position at night or under artificial shade (to avoid colouration), and the outer drum slid over and so attached to the rotating axis that the 'isolation slit' is opposite the hour then present. The slit then begins to move around the inner drum correspondingly to the sun's course. The impressed slip, when removed in the evening, may be 'fixed' by shortly dipping in water and drying between blotting-paper, or it may not, being quickly read; it shows a mostly continuous succession of bands of various shades of black, or rather brown. For comparison, Herr Kreusler made a scale of ten degrees of darkening, exposing strips of the paper a given time under different angles of incidence of light. Bands of the experimental strip that appear homogeneous are now measured with reference to breadth (minutes and seconds) and intensity (by comparison with the scale), and the sum of the products of these quantities is taken as a measure of the action of light rays falling on the instrument in a given time. The results are considered highly satisfactory."

RECOVERING SILVER FROM PAPER.

MR E. STEFFEN, writing in the *Photographisches Archiv*, says:—

"The following process does not require much trouble and outlay. The papers are, as usual, burnt up, which is best done in a common stove which has been cleaned, and after the draft has been half turned to prevent the flying off of the ashes. When thoroughly burned, the cold ashes are gathered up in a glass vessel, and diluted muriatic acid poured over, which must be done, however, only by short degrees, as the mixture will be agitated very much by the development of the carbonic acid. After the development of the gas has ceased, and the mixture has been well stirred and acidulated, it is left alone over night, which causes the foreign substances to be mostly dissolved, which can also be reached quicker through warming. After filtering and washing with rain-water, the residue is dissolved at once in diluted nitric acid, which is done very fast. The nitric acid must also be poured in only gradually, to prevent foaming over. The residue consists of some sand and carbon, which is filtered off.

"Let evaporate, melt, redissolve, and crystallize, and a very pure nitrate of silver (oxide) is obtained for negative baths. The loss of silver is in this process much less than in remelting the ashes in the crucible, which also is very tedious.

"In an experiment which I made, I obtained from 9 kilogrammes remnants of paper, 308 grammes ashes, which weighed, after treatment, 228 grammes. Dissolved in nitric acid, the ashes yielded recrystallized white nitrate of silver oxide, equal to a percentage of 67.5 per cent. of pure silver."

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SUNDAY PHOTOGRAPHY.

A CASE which has excited some interest in South London has recently been decided at the Surrey sessions. A photographer, it seems, had selected the common at Peckham Rye as a suitable "pitch" for securing a clientele among the wanderers in the neighbourhood. How far the exercise of "common rights" warrants the establishment of a photographic studio on the ground we cannot tell; but it appears that the photographer had made his position safe so far, inasmuch as he held a licence from the proper authorities—the Camberwell Vestry. This licence only extended, however, to the ordinary working days recognized by law in this country; but, ill-advised, or over-bold, or possibly enterprisingly experimental, and desirous to test the question, in defiance of the warning of the Vestry he maintained his position and practised his profession on the Sunday as well. This act on the part of the photographer formed one of a series of annoyances in the shape of Sunday occupation of the common which the Vestry felt bound to put down, the more so, as a disposition to ignore the right and power of the Vestry had been manifested; and an indictment at common law issued in the conviction of the offender, and the infliction of a mild sentence, instead of a vindictive penalty, in order to restrain the defendant.

Leaving the question of common rights and the claims of squatters to be settled by law, as we presume they always must be, we take occasion for a few brief words on the professional practice of photography on Sundays, a subject which has frequently been brought under our attention by correspondents, but which we have generally felt indisposed to treat in these pages. Any extended discussion of the matter in a theological sense would be obviously undesirable in a scientific journal. The nature and extent of the authority for the observance of the Christian Sunday in the same manner as laid down in the Mosaic law for the sabbath would be, undoubtedly, a very interesting question in suitable pages. That the observance of the first day of the week as a day of rest and special religious duty is not based upon biblical authority seems to be tolerably clear; but that it is an outcome of that Christian civilization which has done so much for the world, and is so precious to mankind, is scarcely less clear. Some of our American friends have been discussing the matter somewhat earnestly in relation to its religious aspects. In the *St. Louis Practical Photographer* it has had considerable attention. We quote some remarks written in a wise and philosophical spirit by one of the contributors, who enters as fully into the theological question, probably, as it is desirable to go. He says;

"The aborigines of this country have no Sabbath. I am not aware of any heathen people who have one. The Sabbath was a Jewish institution; the present Sunday is indisputably a Christian one, intended to supersede the Jewish precedent, upon which it is founded. If I understand the matter correctly, the days of the week were not named in what are termed 'Bible times,' by which I understand the era from Moses to Christ—the seventh day alone being named. The names in common use are partly Roman and partly Saxon. The Romans gave us Saturn's day, Sun's day, and Moon's day, the first, second, and seventh days of their week having been devoted to the worship of the Sun, the Moon, and the Roman deity, Saturn. Our Saxon ancestors gave us Thew's day, Wodin's day, and Thor's day, representing deities of the masculine gender, and Freiga's day, Freiga being the Saxon goddess of love, equivalent to the Roman Venus. We thus have four Saxon heathen names, Tuesday, Wednesday, Thursday, and Friday, and three Roman heathen names, Sunday, Monday, and Saturday. That Mrs. Brown is right in her position that Sunday does not represent the Jewish Sabbath is undeniable. That Elrod is right in claiming a cessation from labour on Sunday, because the law recognizes that day as a day of rest, and has by legislation prohibited unnecessary labour on that day, is likewise indisputable. That experience proves the necessity of a season of rest, as a sanitary measure, I think no one will dispute; and I think those who know the history of the attempt to banish the Sabbath from France will admit that one day in seven is as near the necessary amount of rest as human wisdom has been able to adopt. Now let me propound a question to those who are very touchy in regard to their rights in the matter of religious freedom: Where did religious freedom get its birth? Was it in the East, where, from the Brahmin to the Pariah, every sect despises and ostracizes every other? Was it from the West, where the Aztec priest immolated on the altar, as a sacrifice to his god, every captive he could lay his hands on? Was it from the South, where the Australian made a feast and ate those who thought differently from the tenets taught by his ancestors? In Asia, to-day, it is as much as a man's life is worth to hint at religious freedom except under the guns of the British soldiery. Where has civilization advanced most rapidly—under the rule of those who respect the Sabbath and defend those who desire to do so, or under the rule of those who despise and reject it? Where is a man's life held cheapest—under Christian or pagan rulers? No need to pause for a reply. Outside of the limits of Bible law woman is a slave, bought and sold, like a horse or a dog; her very life at the mercy of the savage who owns her. In the territory subject to Buddhism and Brahmanism the life of the labourer is the property of the chieftain, and at his nod the head of the serf rolls at his feet. In these lands no Sabbath bell calls the peasant or the prince to worship, yet religious freedom is unknown, and religious toleration is only grudgingly granted where the bayonet of civilization is a terror to the pagan ruler.

"That same civilization which gives us the 'Higher Law' which lies at the bottom of all our legislation, gives us also the Sabbath. That same legislation which makes our lives and property secure, gives us also a day of rest—one day in seven—during which, save necessary labour, our time is our own. That same civilization which makes woman the peer instead of the slave of her husband, demands of her that she observe the Sabbath herself; and for the general good as well as for the special benefit of her own household, that she teach her children to do so likewise.

"Does it not seem strange that while admitting the benefit to the nation which observation of the Sabbath confers, so many of the component parts of that nation claim the substitute right to violate law made specially as a natural benefit? Will the most rabid anti-Sunday-law man stand up before the world and advocate a return to the habits and customs of the peoples who have no Sunday? In our land, to-day, the Anti-Mormon feeling is almost unanimous: there is scarcely a man in these United States who dares to advocate

polygamy; yet, except in countries where the Sunday is observed, polygamy is the rule. The same Christianity that gave us the Sabbath is the only form of religion that protects woman from seeing a second wife supplant her in her husband's affections; from being cast off in her declining years for one more youthful; and left by her natural protector to shift for herself just when her ability to protect herself begins to wane, her strength having been expended in her youthful devotion to him and his interest. It seems to me that obedience to the Sunday laws is a small price to pay for the liberties we enjoy.

"Christ himself says, the Sabbath was made for man, not man for the Sabbath; therefore it seems to me that, aside from the religious view of the matter, we ought to be thankful that God in his wisdom gave it to us, and that our law-makers accept the gift and secure it against the grasping greed of those who would, if possible, rob the labourer of even the one day in seven which sanitary experience proves to be an absolute necessity to physical health and vigour.

"I belong to a society composed entirely of old soldiers. A discussion about shooting arose one evening, and we resolved to have a shooting match. It was moved and seconded that on next Sunday we go out and prove our skill. One old man got up and said, 'I want to try whether my eye is as true as it used to be, but if you decide on Sunday, count me out.' A young man rose and said, 'Comrades, I am an infidel, and I don't care who knows it, but a decent regard for public opinion prompts me to say, if this shoot is to take place on Sunday, count me out.' 'And me,' 'And me,' 'And me,' came from all parts of the room, until the mover withdrew his motion, and a week day was decided on. Now, sir, a decent regard for public opinion ought, in my opinion, to be sufficient warrant for the closing on Sunday of every gallery in these United States, whose people 'by a large majority' respect the Sabbath, and disapprove of the violation of the Sunday laws."

Putting aside entirely all theological consideration as to the right or wrong of Sunday labour, there are other considerations which, in a community such as that formed by photographers, should operate in checking Sunday trade. As the majority of the community tacitly agree to abide by the law of the land and the practice of society, ceasing from business operations on Sundays, all should so refrain as a point of honour. For one man to open his studio is certainly stealing an unfair march upon others who respect the laws of society. Quite apart from religious scruples, it is clearly a mean proceeding to seek this advantage over others whose abstinence from such work is prompted by estimable motives. Photography is, moreover, an absorbing and exhaustive occupation, and if any class of workers needs the seventh day surcease from the mill-round of daily toil, surely the photographer does. We believe that it would not be difficult to show that no real gain is secured by an unbroken round of toil unrelieved by a seventh-day's interval of rest and change, for soothing intercourse with nature, beneficial study of nature's higher laws, and attention to those considerations which raise a man above the carking cares and grovelling aims which belong solely to the earthy part of his nature.

FRENCH CORRESPONDENCE.

INTERNATIONAL EXHIBITION OF SCIENTIFIC WORKS APPLIED TO MANUFACTURES.—LECTURE BY M. CROS ON COLOUR IN PHOTOGRAPHY.—MEETING OF THE CHAMBRE SYNDICALE DES PHOTOGRAPHES.—UNIVERSAL PHOTOGRAPHIC DIRECTORY.

PHOTOGRAPHIC operations, in general, are suffering from the effects of the season—the season, that is to say, indicated by the almanac, for its actual condition is such as to make us doubt whether we are not rather in the middle of autumn. The rain falls without cessation, and

the temperature is so low that we cannot make up our minds to assume the observances and dress suitable to summer. But inviolable custom imposes on us, whether or no, the necessity of "going out of town," and the idleness due primarily to really hot weather has now become habitual during the months of August and September. The last meeting, for the season, of the Photographique Society of France will be held on the 1st of August, and afterwards we shall all be taking our vacation, during which there will be very little news to communicate. There is, however, among us plenty of ambition to take advantage of, and to pursue the improvements which have been recently introduced into photographic processes, and the momentary stagnation will be followed in a few months by renewed activity, so that there will not fail to be a mass of interesting and important discoveries to record.

International Exhibition of Scientific Works Applied to Manufactures.—I may mention, in passing, the inauguration of an International Exhibition of Scientific Works Applied to Manufactures, which has recently been opened at the *Palais de l'Industrie*. Perhaps the term international is scarcely to be defended on the score of the number of foreign exhibitors; in perambulating the Exhibition, which is open to the public, though still in an incomplete state, I was struck by the small number of names affixed to the objects exhibited which are not those of Frenchmen. The section of Photography itself is very sparsely represented, and contains only a couple of dozen to thirty exhibitors; of these, there are only two foreigners—Mr. Woodbury, of London, and Herr Ganz, of Zurich. Moreover, there is nothing exhibited sufficiently important to be worthy of special mention, except it be the exhibition of the French Platinotype Company (the Willis process), of which the managing director in Paris is M. Stebbing. This is the first time that impressions in platinum have been publicly exhibited in France, and, for this reason, the circumstance appears to me to be the most interesting and noteworthy in our special section. Naturally, I can readily believe that immediately after the International Exhibition of 1878 there are very few persons who are disposed to make another display of their productions. The object of those who organize an exhibition of this kind is rather to establish a market or bazaar in a place to which the public has frequent and easy access, than to give occasion for an important industrial competition, or to stimulate further progress by a comparison of exhibited works. Not that I wish to criticise adversely the undertaking; it has its uses, and is capable of rendering good service in facilitating commercial transactions; I can therefore give it my full approval. But I think it only right to distinguish its special character from that of other exhibitions, whose objects are theoretically more important. Besides, I have myself the honour of being one of the organizers of this exhibition, and that is sufficient to show clearly that anything I have to say about it must not be taken as an unfriendly judgment.

Lecture by M. Cros on Colour in Photography.—M. Cros has recently delivered a lecture at the hall of the *Boulevard des Capucines* on the subject of the natural colours in photography. I was not present at the lecture myself, and can therefore only repeat what was told me by one of the audience. This gentleman, although a very intelligent and highly educated man (he is the author of some well-known works on art), brought away a very curious idea of the subject of the lecture: he thought that by the process of M. Cros the natural colours themselves are reproduced, and that there is nothing further necessary than to superpose these colours printed directly by photography. Great, therefore, was his astonishment when I told him that M. Cros could not have made such a statement, nor have wished it to be believed. I further informed him that M. Cros's system consisted simply in taking three

monochromatic negatives of the same subject, each one producing the actinic effect corresponding to one of the three primary colours—blue, yellow, and red: and that afterwards these three negatives are used for getting three monochromatic plates of those colours, but that the colours employed are selected from ordinary pigments, the same as those used by painters or for chromo-lithographs. "But, I assure you," he kept replying, "that is not what I was told." Evidently my friend had not understood M. Cros. Still, the result of the manner in which the lecturer expressed himself seems to be that his audience was carried away with the notion that there is a direct impression in colour, and believed in the possibility of reproducing photographically in colour the real colours of nature. M. Ducos du Hauron goes just as far when he calls his process, which is very nearly the same as that of M. Cros, Natural *Heliochromie*; this gives the finishing touch to the misconception. Besides this, if what I have been told is true, M. Cros wishes to make a position for himself at the expense of some of his colleagues, and principally of myself, and he is reported to have gone so far as to say that a southerner had succeeded in capturing the confidence of one of the largest manufacturing firms, &c., &c.; and by the southerner he means me. M. Cros is quite at liberty to attack the processes of his colleagues, and to call them all manner of names; he has a perfect right to do so, just as much as I have a right to declare that his system of working with three colours is chimerical, and to point out that it is false in theory, and unreal in practice. But why should he go beyond that point, and venture on personal imputations, whose least defect is their inaccuracy? And why does he employ arguments the principal effect of which is to rebound and injure the person using them? For my own part, I am too much above invectives of this description to take any great heed of them, and if I mention them, it is not from any feeling against M. Cros, who is probably ignorant of the scope of the falsehood of his accusations, but on account of the public, before whom a charge has been made which it might be inclined to believe, if I were to pass it by without notice. I can well understand the secret invitation caused by my frankness in telling the truth to the public without heed of any petty jealousies, even when the question is as to the laborious and, no doubt, well-meant efforts of M. Cros on the one side, and of M. Ducos du Hauron on the other, to induce the public to believe that they have solved the problem of the reproduction of the natural colours by photography. They speak with a conviction which I have no right to suspect; at the same time, my own conviction remains unshaken, and, without doubting their honour, I maintain that they are endeavouring to establish an unparalleled error, and that they are in a fool's paradise of their own making. But why do they seek to draw a parallel between their processes and (too great an honour for me) my method of applying photography to mechanical printing in colour—*photochromie*, as I have called it? What connection exists in their opinion between a simple combination of the photographic image by means of several impressions in various colours superposed on one another, and their process of reproducing the natural colours? Now, if my method, which is in substance merely an industrial application of photography, displeases them, if they believe it to be bad, and that no successful object can be attained by it, I do not think that they are unjust in saying it; nay, more, they have a perfect right to do so. But they exceed the limits both of law and of justice, as well as those of propriety, when—as I have been informed on good authority they do—they make an attack on the person, instead of confining their criticisms to the thing. I hope I have too much proper respect for myself to follow my honourable opponents in such a path as this; and I wish to close the discussion at this point. I will only take the opportunity of mentioning that I have in preparation an important work, to be published by M.

Gauthier-Villars, on the subject of colours in photography and on photochromie. In this work I have included all the evidence, and an account of all the facts, bearing on this interesting subject; it is illustrated with plates, and contains also a refutation of the theory on which rests this famous *Heliochromie naturelle*, which is no more a solution of the problem under consideration than any other artificial means of producing coloured photographs. This solution, so earnestly sought for, is still in the womb of the future, and however interesting may be the experiments and investigations which have been hitherto undertaken—and those of M. Cros are not the least among them—I cannot permit it to be said that they lead in the slightest degree to the end wished for. But, as will have been observed, I only combat against his system with the arms of courtesy and fair play.

Meeting of the Chambre Syndicale des Photographes.—Here we have nothing theoretical—nothing which touches on the technical part of the profession in which we are engaged; the *Chambre Syndicale de la Photographie* is an association of professional photographers formed for the protection of the interests of their occupation, and for the mutual study of those industrial questions which have a common interest for all. Another object of the Association is to take every means of defending the profession against all hostile attacks, and to bring collectively to the notice of the Government all those points on which photography can be of public advantage. These objects, it will be admitted, are such as should receive general support, especially in a country where the profession of photography includes so large a number of adherents as in France; it is reckoned that in Paris there are about 2,000 photographers, and about the same number in the provinces. Now the number of members of the *Chambre Syndicale* scarcely reaches 50. Among all the other members of the numerous body of photographers there appears to prevail a kind of indifference on the subject of the future of their art. They do not seem to care in the slightest degree for having a voice in the passing of laws which may affect the whole of the profession—for putting any pressure on that branch of the legislature which is considering the question of the extent to which photographic materials should pay duty—for appearing before the committee to whom is referred the subject of artistic copyright. Among ourselves the spirit of co-operation is very far from being so strong and general as it is in England; everyone is ready to throw upon others the burden of defending even his own nearest interests, and there is generally a want of the spirit of good fellowship. It may be said that, because a colleague is also a rival, therefore there is no reason for combining either for common defence or for common intention. But, it should be retorted, it is just in the name of a common interest that all forces and ideas should be united, instead of each acting alone on his own account. All this was said at the meeting by M. Berthaud, the honourable president of the Association, and resolutions were adopted having for their object the overcoming of this want of interest on the part of the majority. The questions which are pressing for immediate solution were entered on the agenda list of the next meeting, and especial attention was drawn to the regulation compelling every photographer authorized to take copies of the public documents in the State libraries to furnish the Government with a negative of each work thus copied. Most decidedly this appears to be an exaction, and had a committee of the more important members of the profession, representing the whole body, been consulted by the Government when the law was drawn up, it would have certainly prevented the introduction of a clause whose least consequence is a direct attack on artistic copyright. Questions of this kind surely affect the interests of the profession as a whole, but they would hardly come within the cognisance of a purely photographic society which is more especially devoted to the

management of technical improvements in our art and to the furtherance of new applications. It is much to be desired that there should be a means of presenting to the public the more official side of our profession; the photographic art could scarcely fail in consequence to gain in importance and practical utility.

Universal Photographic Directory.—Dr. Hornig, the distinguished and respected President of the Photographic Society of Vienna, has just published the first edition of a directory professing to contain the addresses of all the photographers in the civilized world, arranged alphabetically under the heads of countries and sub-heads of towns. Of course, at present, it is in an incomplete condition; and the Editor can only hope to make so large a work perfect by obtaining a co-operation of all those who are interested in its accuracy. A number of copies of this directory ought to be deposited at the places of meeting of all the photographic societies, and at the offices of all the photographic journals, so that there might be an opportunity for the correction of errors and the rectification of omissions. Dr. Hornig's work will, no doubt, be of great value; it is international in the highest sense of the word, and, for this reason, every one who is in a position to supply information necessary to make the work complete should at once do so. I feel convinced that any information of this kind that may be furnished to the indefatigable Editor of the PHOTOGRAPHIC NEWS by any of its readers will be immediately forwarded to the author of the *Universal Photographic Directory*.

LEON VIDAL.

PS.—At the instant of concluding this letter I have received the number of the PHOTOGRAPHIC NEWS for the 25th July. The subject of the lawsuit between MM. Liebert and Pierre Petit, as to their respective rights in the use of the electric light in photography, appears to me to have now been sufficiently discussed, and I do not think that there would be any advantage in saying anything further in reply to the very courteous explanation that M. Versnaeyen has been good enough to make.

GUP.

"To-morrow, and to-morrow, and to-morrow," has indeed been creeping on with petty pace from day to day, for many a long week past. "The rain it raineth every day," has been the universal cry, and the *Thunderer* has had ample scope to vindicate its awesome name by forecasts in which thunder, lightning, and rain have been variously recurring like bells in a harshly jangling chime. In spite of all attempts to lessen the ills of bad weather, the consequent depression of trade must have told sensibly upon the pockets of those to whom photography means daily bread. Amateur landscapists, too, have had their hardships. For what can be more intensely aggravating than to be interrupted, while adjusting the focus, by the premonitory drops that herald a down-pour? And, Oh! the weariness of developing a negative which ought to be all brilliant lights and shades, and which, naturally enough perhaps, turns out a dull mass of flatness, instinctively reminding one of a soiled handkerchief with holes in it, or of some other equally inspiring object.

But the weather is improving at last, at any rate, in my "parts." Moreover, with provoking inconsistency and utter disregard for constitutions that are not cased with steel and lined with sheet iron, it has run into extremes. The sun is a highly commendable institution, but the practice of dancing suddenly up and down the thermometer, like a monkey on a stick, is shattering the kaleidoscopic system, however much it may be improving the kaleidoscopic negative.

I suppose photographers are beginning to look about them for subjects for the autumn exhibition. I trust the

latter will not be ruined by the Sydney International, as it was last year by the Parisian. After all the progress that has been made in rapidity, and other branches, I think the Photographic Exhibition of 1879 ought to contain something startling. Mr. Laws' gas-light portraits ought to be on the line, as well as Mr. Symons' photograph of the mirage, and a frame of Messrs. Wratten and Wainwright's boat-race pictures.

On dit that Messrs. W. and W. are shortly about to introduce gelatine plates that are to be fifty times as rapid as wet collodion ones. I am debating whether to order a photographic binocular, or a photographic pea-rifle with an electric trigger. A farewell ode to my patent camera and rapid rectilinear is awaiting inspiration.

Talking of remarkable pictures, peradventure there are some of my readers who have never heard of the famous Indian tiger picture. This is how it came to be taken. A gentleman was photographing a cave, and, after due exposure, took away the plate to be developed. On development, he was astounded to find in the negative not only a picture of the cave, but also one of a tiger glering in the most naturally ferocious fashion from the mouth of the cave. It seems probable that at the moment the operator was exposing the plate—and, perhaps, bending his head to consult his watch—the tiger passed by, glared at the intruder, and, perhaps, not considering him a sufficiently digestible morsel to "force sweet appetite," made tracks before the photographer became unpleasantly aware of his vicinity.

I should have liked to have been that photographer!

Some little time ago I meandered through Messrs. Howell and James' art pottery galleries, and was much interested, if not instructed, by their graceful contents. It has struck me that a photo-ceramic gallery, if really well conducted and well advertised, would be a great success. Don't you think that this is an idea that might be made to bring forth fruit—eh, Mr. Henderson? Would not foreign enameillers contribute goodly exhibits, and could not fashionable London be educated up to the buying point? Society would be mad to possess a Mrs. Langtry tea-cup, a Maude Branscombe saucer, or a slop-basin embellished with a full-length picture of Mr. Irving. There might be an æsthetic bar for American drinks attached to the gallery, and photo-tessellated with portraits of Sir Wilfred Lawson.

Diavole typographique, you are a sad little imp to prune my period and misinterpret my copper-plate "copy" with the misguided recklessness you betrayed last week. To read "capable" for "palpable" is a playful and maybe pardonable eccentricity; but "even" for "ever" is like sitting down on a tin-tack unawares, a perceptible, yet not altogether convenient, mistake.

Some one has sent me a catalogue of a Photographic Artists' Co-operative Supply Association. Personally I do not intend to desert my ordinary dealers in order to save a half-penny on an ounce of this, or three-farthings on a pint of that, or a penny on a dozen of the other. But there are others, perhaps, whom co-operation does interest, and who are willing to hear a few lines of "gup" on the subject. The P. C. S. A. is located at the former premises of the Uranium Dry Plate Company, in Goswell Street, and professes to do anything or everything in the photographic line. It makes a speciality of lenses, and gives an imposing chemical list. The chemicals are mostly those of Messrs. Hopkin and Williams, and the reductions are hardly—if at all—worth mentioning. One item deserves notice, namely, Schering's celloidin, which we have not remarked in any English dealer's catalogue as yet. Photographers may be pleased to know where they can obtain this undoubtedly valuable article. For the rest, photographic dealers and manufacturing chemists will have little

to fear from the apparition of the co-operative goblin amidst their hitherto unbroken ranks. To me photographic dealers have always appeared the most reasonable of traders.

I don't know much about the whole concern; but I think where gentlemen begin to play at shop-keeping, the sooner they drop the Esquire, and attune themselves to be called plain trader, speculator, or any other name that denotes their real occupation, the better.

If, however, photographic co-operation is to exist, why not have a co-operative society to prepare and develop customers' plates—aye, and to expose them as well? What a boon that would be to some not altogether unknown to

KALEIDOSCOPE.

Correspondence.

PHOTOGRAPHY AS A BUSINESS.

DEAR SIR,—The relationship that exists between an employer and his assistants is a question of some moment when we are considering photography as a business. I was not thinking particularly of this one matter when I wrote my last to you. But as your correspondent "George Bradford" has broached it, I may as well treat of it now as later. I am not willing to come to the conclusion that business principles among photographers have a lower standard than they have among other tradesmen; but I am sorry to say I feel rather shaky about it at times. That there is a great crowd of worthless unprincipled employers is as true as that there is a great crowd of worthless unprincipled assistants. It would be difficult to find a respectable assistant of ten years' experience who had not at some time suffered insult and injury from some such man as your correspondent tells us had him in Exeter. It would also be hard to find a respectable employer who has not been put to great trouble and inconvenience through the bad conduct of troublesome assistants. I was myself had last year by a low-minded, unprincipled fellow in the same city your correspondent dates from, but it is no use talking about such. We dare not publish their names, and such men as the one who insulted and robbed me care little what we think of them so long as their conduct pays them.

Yet I have very pleasant recollections of the beautiful city of Bath, as after I got clear of this fellow I went straight into the employ of a gentleman in the same city who treated me like a gentleman, and when we parted gave me his cordial good wishes for my future welfare. It is for the sake of such as him, as much as in the interest of my fellow-assistants, that I am writing, fairly and impartially bearing in mind the interest of both parties. I will endeavour to show how the good men may best avoid getting entangled with the bad, also what is the duty of each party respectively to the other.

When an employer wants an assistant it is to his interest in most cases to advertise for him, in preference to replying to the assistants who advertise for a situation, because he is sure to have a number of applications to select from, and it is strange if he cannot find one applicant who offers reference to some good house that he is acquainted with. He should give the preference to a man that has served his time in a good house, and if he wants an experienced man, he must select one that has been through some houses besides the one he served his time in; and when he gets a man who suits him, both in ability and temperament, give him a fair salary, and endeavour to keep him. Don't discharge him as soon as the days begin to get a little short and trade slack; this is a most unjust and cruel thing to do. What is the man who has served you well and suits you to do during the winter, if you, who know his worth, cannot keep him on? He has not much chance to get a situation among strangers at that season—has he? There is lots of work about a photographic establishment that a spare man can do during the winter. You are always wanting changes and alterations of some sort made

—backgrounds, accessories, and blinds all want looking to. The winter is the time to do it, and your own men are the men to do it, instead of leaving it over to the spring, and getting in a cabinet-maker to do the work, who will probably want you or one of your assistants to stand by him all the time, to show him what it is you want. In the winter you must push your business, make work, go in for enlarging and copying, introduce novelties that you have no time to attend to during the summer, and so manage to keep your assistants employed; and when the spring comes round, it will certainly be a comfort to you to know that you have got everything in proper working order, and good men round you that you can depend upon, instead of having to try new hands, and probably being annoyed by two or three duffers before you get one to suit you. Mind you, if you have discharged a good man in the autumn, and left that poor unfortunate to shift for himself during the winter after having worked hard and served you well during the busy season, it serves you right if you have some trouble to get another good man when you want him.

As regards salary, it is directly to the advantage of both parties that it should be a fair and just remuneration for services. If an employer engages a man when he—the man—is hard up, he may easily induce him to accept a lower salary than he is really worth; but he may be sure that he will leave him as soon as he sees a chance of bettering himself. Well, if you find the man is right and suits you, give him a fair salary; don't wait for him to ask you. Let the man know that you appreciate his worth, and if you are paying him the same that you believe anyone else who knew him would pay, there is no chance of his leaving you, because everyone knows that shifting about from place to place is a losing game. The salary should be just what will make each party feel independent of the other. The employer should feel that he is paying the man a fair price for his time and ability; the assistant should feel that he is getting a fair price for his work, and that he could get as much from any other employer who knew him.

What is the result? Each is independent of the other; but as it would almost surely be some loss and inconvenience for both to part, they will study one another's interests.

Of course, these remarks can only apply to good employers and trustworthy assistants. About the others I cannot say much. But I will tell you what appears to me the best way to decrease their numbers: that is, try to shut up the little establishments. A house that cannot find employment for an operator, a retoucher, and a printer, is not much good to anyone, either principal or assistant, and the quicker it is shut up the better. Such a house will keep two or three young ladies and two apprentices, besides a boy or two, and can get through an amazing amount of work easily. I assure you the boys are quite an important part of an establishment. They can save a great deal of a man's time; they can do the running about much easier than a man can, and leave him to his more important duties. It is the duty of every employer to keep a proper number of properly bound apprentices: if not, where are you going to get your tradesmen from? You don't want to have to rely upon men who have picked up the business—do you? I think you have done that too long.

I do like to see an advertisement for an operator "who will not object to make himself generally useful;" that means clean the plates, clean the dark-room, and, probably, the studio too.

Now an operator should be able to do all this, and to take a turn in the printing-room too, if necessary; but the employer who is foolish enough to pay a man to do boy's work should direct his abilities into some channel where there is no call for mental capacity. I don't wish anyone to suppose I put printing down as boy's work. It is too often left to boys to do, but it should not be. The head of the printing department should be a clever, able man, and is worth just as much as the chief operator.

I am afraid of making this too long for insertion in your

columns, but I cannot close it without saying a few words to assistants, but I will cut it as short as possible. When an assistant is looking for a situation he must avoid the little houses that I have spoken of; they do not pay the proprietor, consequently he cannot pay his assistants a fair salary. These are the sort of employers who advertise in the spring for an operator who can retouch. "A permanency for a suitable man." He will work you for three or four months, probably; he will want you to do everything, from dusting the studio and cleaning plates to a "little spotting in your spare time," day after day, as hard as you can go, driving all the time, until the short days come round, when, somehow, he will discover that you are not just exactly the man to suit him. Avoid them. Avoid the employer who is advertising about every two months for an assistant, and the man who does not put his own name and address at the bottom of his advertisement. When you get into a good situation with a good man, try to keep it, study his interest fairly, push his business for him to the best of your ability, maintain your rights and position, but don't hesitate to turn your hand to any work which may not be exactly in your department in a case of emergency. Don't scowl if there is a sudden rush of customers at dinner hour, neither make a practice of missing your dinner. In a house such as I have spoken of as a fair medium sized establishment, one man can always get away for half an hour, because someone else can take his place. Don't grumble to work an hour late at night now and then if necessary; neither make a practice of working late every night. Recreation and relaxation are just as necessary to a man as work is. I don't like to see a man make straight for his hat when the clock strikes six, leaving his work just any how; but if it comes night after night that you cannot get through the work in a fair day, your employer wants another assistant—tell him so. When you come across an unprincipled man, whether employer or assistant, cut him: don't recognize him as a fellow tradesman. I must leave off now, though I have not nearly exhausted the subject. MASE.

SIR,—I addressed a few words to my brother operators two weeks ago, advising them to join, unite, and defend themselves from the octopus embraces of bogus employers.

A master has answered in strong, very strong, and intemperate language. He slings mud right and left with a recklessness that smacks of desperation. Wherefore all his passion, if he is a "good man and true?" "Let the galled jade wince; our withers are unwrung!" Let him read my letter over again, and he will find that I did not address myself to *would-be* operators. I spoke to good and clever men—men who wish to meet with good and conscientious masters; and, in my estimation, the aim of my last letter points at being of as much service to the master as the man. I likewise would add, that I never intended to take away anyone's character. The employers I alluded to have never any to lose.

With regard to the abusive language in "Exonian's" letter, I treat it with the contempt it deserves.—I am, yours respectfully, GEO. BRADFORD.

Proceedings of Societies.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

June Outdoor Meeting.

THE first outdoor meeting this session took place on May 18th to Farleigh Castle, beyond Limpley Stoke, Somersetshire. The assemblage took place at the Clifton Down railway station, Bristol, from whence the Association proceeded by train to Bath, being met by the members of the Association who reside there. A brake was in waiting, and all the "wet and dry" paraphernalia having been stored away, the journey was continued, the camera stand, legs, &c., appearing here and there "promiskis like," as Mrs. Brown terms it, causing a certain amount of curiosity and wonder in the otherwise proper and sedate Bathonians.

The weather, which, early in the morning, threatened to "work the wet process," seemed quite to realise the fact that a "dry process" day had been arranged for, and so in an amiable manner determined to act in concert, the result being that, apart from a rather conspicuous presence of Boreas, the weather was delightful.

After leaving Bath, beautiful scenery was almost immediately entered; and, after driving for some miles, a halt was made at a most picturesque and fine aqueduct, over which the Avon and Kennet canal flows. Cameras, stands, changing boxes, &c., soon seemed to spring into existence, and some plates were exposed on a very pretty subject, being a lock, lockman's cottage, some very pleasing foliage hits forming a background. The wind proved itself very troublesome, but the majority of the members working with very rapid gelatine plates, a good many "shots" were made during a moment or two of calm.

The journey being again continued, none could help thoroughly enjoying the richness and varied character of the country through which they passed. At Limpley Stoke railway station another member was picked up by pre-arrangement, and with that ever lively sort of freemasonry which exists amongst amateurs, a gentleman, formerly a member of the Liverpool Society, accosted one of the members, and, after a pleasant chat, wished us hearty success. Arrived at Farleigh, the Rev. H. Hare, being well acquainted with the district, kindly volunteered to act as guide.

Everyone now seemed to "mean business," and many most charming "hits" were at once selected. The ancient and picturesque castle was at once visited, the chapel attracting very much notice. This is kept intact, and is adorned with a large number of suits of chain and other very old and fine armour, besides an original autograph letter of Oliver Cromwell in a fine state of preservation, of which one or two successful negatives were obtained.

Here a few plates were left to expose (it being an intensely dark subject), while the "wet process" with "beer preservative" was most successfully worked by the members pretty generally, bread and cheese, &c., being found very conducive to effective "density."

Farleigh House, a very quaint and pretty watercress farm, and other attractive subjects, were subsequently taken (old Boreas having retreated and allowed tolerable stillness to exist), and so time wearing on, a reluctant return to the brake and refreshed steeds was made, and a delightful country drive brought the party to Bath, where Mr. R. Biggs, deputy-coroner for west Somersetshire, most kindly invited the Association to form itself into his jury, using his dining room as its chamber while deliberating around his hospitable board. A verdict was very shortly arrived at unanimously, which was to the effect that "Mr. Biggs was a jolly good fellow from natural causes." It is, of course, quite unnecessary to state that the "jury" sat on nothing more tragic or doleful than chairs.

The Association (with the exception of the Bath members) then returned to Bristol, the unanimous expression being that a most enjoyable day had been spent.

July Out-Door Meeting.

The second out-door meeting for this session took place on Wednesday, 23rd inst., the place selected for visiting being the private glen at Blaize Castle grounds, which Mrs. Harford kindly placed at the Association's disposal. The meet took place at the Clifton Down station, and as it was understood that "wet plate" work would be the order of the day, the boxes, &c., presented a rather bulky, but nevertheless determined, appearance. All being ready, a start was made, and after a three-mile drive across the splendid Durdham Downs (the property of the Bristol citizens), and through the pretty village of Westbury-on-Trym, the eastern entrance to the richly wooded and beautifully undulating Blaize Castle estate was reached.

After passing the two gate-houses (where the party's credentials were solemnly inspected by an old family servant) the brake descended the winding drive which leads to the private glen.

The Hon. Secretary, having had the privilege of a couple of days' work there hitherto, knew the geography of the place, and his advice being taken, the traps were deposited.

The day looked as if meaning to turn out all that could be desired, the sun shining most brilliantly, with here and there a fleecy cloud to temper its harshness, and everything looking bright. Here, then, under the shadow of Giant Goram's Chair, and the Lover's Leap, with the picturesque pool and its water-lilies and ivy-clad bridge at their feet, the members pitched their

tents. But alas! the first camera had not been placed in position and the exposure commenced, ere groans and lamentations were heard on account of the gradual but sure increase of wind. An hour or two were soon employed, however, in "spotting" suitable bits, which abounded when the time approached for the trials to be made, most of the subjects being those for afternoon light.

Most members seeming to possess some remarkable instinct as to the approach of lunch time, all were soon assembled. One member who had been lost to sight, to memory dear, for a couple of hours, appeared with a most effective and pleasing oil-colour sketch of a cascade in a part of the grounds, seeming determined not to waste time, although the wind did seem bent on being unfavourable.

After lunch, several plates were exposed, both single and stereoscopic, from the latter size to 12 by 10, both by the dry and wet process, and it was quite evident that the former (gelatino plates) had a great advantage over the latter, as far as windy days were concerned, full exposures being quite possible just between the puffs of wind. As the day wore on, however, the wind grew too boisterous for photographing, some members having stood at their cameras more than an hour trying to get spoils of a few seconds' stillness to make an exposure, and after all being unsuccessful and giving up in despair. Disappointment was depicted in every face (except that of our oil-colour friend, who certainly had the best of it) and amid lamentations (and I fancy I heard stronger vernacular), packing was commenced, very few negatives indeed having been secured. The atmosphere, &c., being perfect, it was felt to be most unfortunate that work had been so disastrously prevented by wind alone.

On the return journey an exposure was made with a gelatino plate by one member, the subject being a panoramic view of Westbury Village and adjacent hills. At the invitation of the Hon. Secretary, the Association returned to his house, where a more satisfactory and successful performance took place which was more agreeable to the body than the experiences of the day had been to the mind. Chatting in the evening over the coffee concluded what all wished had been a more successful day.

Talk in the Studio.

THE SILVER DEPOSITS OF LEADVILLE, COLORADO.—Says a correspondent of the *Boston Advertiser*:—"The ore beds vary from one to forty feet in thickness. They are generally undulating like the waves of the ocean, so that the distance from the surface varies with the undulations. The size of a mining claim is in most cases 300 feet inside by 1,500 feet long, being about ten acres in area. The ore known as "hard carbonates" consists of silver mixed with iron or lead. The soft or sand carbonates resemble common road gravel, yellow and red ochre and grey sand. Chlorides of silver are frequently visible in the hard carbonates. The usual size of a shaft is $3\frac{1}{2}$ feet by 7 feet, and is substantially timbered. After the ore deposit has been penetrated, the "main entry," "parallels," and "cross cuts," are excavated, leaving the remaining ore in blocks while the work of exploration is going on. In sinking a shaft we usually penetrate, first, a deposit of gravel or "wash" from 20 to 100 feet in thickness, frequently containing boulders which have been subjected to abrasion. Not unfrequently a stratum of "cement" a few inches in thickness is encountered, resembling Roxbury pudding stone or an old cemented cellar floor. Next we come to calcite, or porphyry—sometimes soft like "fire clay," either pure white, grey, or red—the latter showing an iron stain. The soft porphyry runs from one inch to several feet in thickness. The hard porphyry is often "pieking ground" (i.e., porphyry rock, which can be excavated by means of a pick), but frequently it is blasting or "shooting rock." Following the porphyry is iron ore, varying in thickness and sometimes containing a few ounces of silver. Following the iron we find the "pay ore," more or less rich in silver. The generally accepted theory is, that this region was once covered with a lake, the waters of which held in solution silver, lead, and iron, which were in time precipitated on the bottom of the lake. The porphyry, gravel, &c., were subsequently deposited. After the precipitation came the age of disturbance, when by volcanic action or the shrinkage of the earth's crust the deposits became contorted, sometimes tilted or broken like a "chop sea," or gently undulating like the "ground swell" of the ocean.

To Correspondents.

R. S.—We should consider the present arrangement of your studio all wrong. The only glass you have not blocked up is, you say, on the south-west side. That is really the side where the glass would be better blocked up. We should make the studio five feet narrower, as you propose, and get your principal light from the north-east side, which should be clear glass. The ends should be opaque. If you work with a north-east light you will have no difficulty in working at either end of the studio.

J. T. B.—A silver-plated funnel will answer for filtering a gelatino-bromide of silver solution. But we should not recommend the use of any other metal.

IONIO.—We believe that Mr. Solomon keeps iodized paper for printing enlargements by development. There are various formulæ for preparing such paper, each declared the best by the person devising the formula and becoming familiar with its working. Here is a formula which gives, we believe, very good results: Water 1 ounce, iodide of potassium 2 grains, bromide of potassium 4 grains, chloride of ammonia 6 grains, gelatine 2 grains. The silver bath contains 50 grains of nitrate of silver and 2 minims of acetic acid to each ounce of water.

B. F. D.—Last year a small charge was made to non-members. You will ascertain, when the circular of conditions is issued, all the details of arrangement for the next exhibition. Until last year no such charge was made; non-members, as well as members, were eligible as exhibitors at the forthcoming Exhibition of the Photographic Society, and were also eligible as competitors for the prizes offered. The conditions of membership in the Society are an interest in the art and the compliance with the rules of membership. To become a member you must be duly proposed by a member. The nomination having been submitted to the council and passed, the nominee is then submitted to the ballot in a meeting of the members, and elected. The subscription is one guinea annually, and one guinea entrance fee. We regret that extreme pressure of duty did not permit us to write. We shall have pleasure in proposing you as a member of the Society if you desire it. The next session commences in November next.

TRY HARD.—The defect known as "crapiness," of which you complain, is due to the presence of too much water in your collodion, or, in other words, to the use of ether and alcohol insufficiently rectified. It is probable that excess of somewhat weak alcohol has been used. Equal parts of ether, of a sp. gr. of .720, and of methylated spirit, sp. gr. .820, will generally give a satisfactory collodion; but if, as you say, you have used two parts of rectified spirits and one part of ether, the collodion will probably contain too much water. The collodion once made, you cannot remove the water, but you may use up the collodion by mixing it with another good sample. You may also, to some extent, modify the defect by letting the film set well before immersion in the nitrate bath.

D. W. H.—In our experience, collodio-chloride of silver prints, either on paper or glass, are permanent. For use on opal glass, collodio-chloride of silver should always have citric acid added. In printing with this preparation on opal glass we prefer to work on the glass itself without any substratum. Take dilute albumen, consisting of one part of white of egg to three or four parts of water, and apply an edging about one-eighth of an inch wide all round the glass; when that is dry, coat with collodio-chloride. Allow the film to set thoroughly. Then dry by a dull fire, and print as soon as the film is cold again. Tone in an old weak gold bath. Fix by immersion in a hypo bath, containing one part in eight, for five minutes; then wash under a tap for five or ten minutes. Plates so treated will be quite permanent. There are two causes for films splitting; one is the use of a very tough contractile collodion, the other the use of a collodio-chloride which has become somewhat decomposed with age.

M. M.—The advantage of the use of carbonate of lime in the toning bath for neutralizing any free acid in the chloride of gold is its insolubility, which prevents the solution dissolving excess of alkali.

PHOTOGRAPHERS AT EXETER.—A correspondent from Dawlish writes as follows:—"I have a fancy that the letter in the *News* of July 18th, from 'George Bradforde,' is a gross libel on the city of Exeter and the profession, for the following reason. A young man lately from London has taken a situation in Exeter, and thinking he would like to know who the employer was, sent a letter to the address given; it is just returned through the *Dead Letter Office* as not known." Our correspondent's reason is inconclusive, and his fancy not well founded. A libel must refer definitely to some one, or it cannot be a libel. The letter referred to carefully avoided personality or reference to any one who could be identified. The city of Exeter could not be in any way responsible for the acts of one of its inhabitants. The "young man" in question must have been very young indeed if he hoped to ensnare the writer of the letter into mentioning names, and so make his hitherto innocent letter really a libel.—**ED.**

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION. The address of the Association is 160A, Aldersgate Street.

The Photographic News, August 8, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

SUMMER TIME AND AMATEUR PHOTOGRAPHERS.

THE landscape photographer is at last blessed with fine weather, and the many gentlemen, aye and ladies too, who have been patiently waiting for summer to try new apparatus and the new extra-rapid gelatine plates, will not have lost their opportunity. It would be interesting to know how many amateurs there are in Great Britain who occupy their spare time with camera work; but that their number is legion is evident, if only by the large number of dry plates that are prepared and sold, and which find their way for the most part into the hands of dilettanti. We know this much, however, that the amateur photographers of Great Britain have made a mark for themselves, and that not a few of the improvements which we employ to-day are due to their practice and experience. Both in the science and art of photography, the gentlemen and lady amateurs of Great Britain can boast that they have in many instances been in the van. To cite the names of Russell Manners Gordon and Robert Crawshaw is quite enough to prove our words, while scarcely an exhibition at Pall Mall passes that does not contain the work of lady photographers: Mrs. Roscoe, Mrs. Huggins, Mrs. Annie Brassey, are well-known workers with the camera, and there are others not less ardent and efficient. Neither time nor money is spared to effect improvement in their results, and they are ever ready to make known the fruits of their experiences. In many respects the camera offers pleasant occupation. The charm of securing pictures of well-beloved spots, and the fact that a degree of attention and labour is necessary to performing the task with success, renders photography attractive to many who have no wish to idle away their spare time. One class of enthusiastic amateur is the traveller or tourist, one who knows that his work must be well done if it is to repay him for the toil and trouble involved in carrying an apparatus with him on his journey. He cannot afford to do things in a haphazard fashion, and must needs qualify as a capable photographer before he starts. He may lighten matters as much as possible by the adoption of dry plates, but it does not suffice merely to put these into the camera, and uncover the lens for a time, in order to secure good pictures. He must have an eye to artistic effect, and some experience in the choosing and modifying of foregrounds, in the vagaries of his lens, and, more than everything else, possess considerable knowledge on the subject of development. With dry plates, however, the amateur photographer certainly gets rid in summer time of more difficulties than those involved in the dipping bath. He need not give much attention to the subject of heat. There is no fear of the plate spotting, or becoming dry during its sojourn in the dark slide. Many ways have been proposed for getting rid of the liability of wet collodion to desiccate in the camera, and yet there are none that can be safely recommended to an amateur who is not well versed in manipulation. All preparations that have been proposed for application to the wet films have their drawbacks, and if wet plates are employed on a hot day, the simplest plan of keeping them moist is to put behind the glass a sheet—or, better still, double sheet—of filter paper soaked in distilled water. A measure of this kind does not affect the film, while the evaporation that goes on is sufficient to maintain the collodion in a damp and cool condition quite long enough for ordinary purposes. The re-dipping of a dried plate is also a simple way of getting over the difficulty; but many photographers do not like having recourse to such an expedient, for the simple reason that impurities may thereby be carried into the dipping bath; and to employ another silver solution on purpose is rather a costly mode of pro-

ceeding. The dry plate has therefore a considerable advantage over a wet one in summer, and it is in summer only that the amateur, as a rule, works. In the dull, cold months he leaves his professional brother in full possession of the field, and contents himself with improving his negatives or overhauling his apparatus. Let anyone who wants to know what amateurs can do, look at the prints annually submitted by the members of the Amateur Photographic Association to compete for the yearly prizes. The beautiful landscape scenes transferred to the sensitive plate are wonderful to behold, and they generally include pictures taken in nearly every European country. The amateur landscape photographer is, in nine cases out of ten, something of a painter or draughtsman, and the artistic training helps materially in the choosing of foregrounds and composing of pictures. A man who has studied picture-making does not allow square miles of dry grass to appear in his foreground, nor allow a wooden railing to run across the middle of his scene. He has always an eye for a rocky boulder with a tuft of ferns, a broken-down stone wall half smothered in ivy, or some still back-water with a huge water lily upon it. These are good subjects to compose in the foreground, and if a homestead and cottage thatch can be brought into a landscape, he knows it will at once stamp the picture with its nationality. Indeed landscape photographers, when they wish to record mountain, waterfall, vale, or glen, generally do well if they can secure some rustic tenements alongside the natural beauty, to give the same a distinctive character. The Tyrol chalet is to be distinguished from the Swiss, as a rule, by the highly-wrought wooden belfry that is seen in the former, while the mud cabin of the Irish peasantry is distinct from the cot of an English labourer. A Yorkshire hut of dull, grey stones differs, again, from one of brighter Kentish rag; and the whitewashed tenements of the German, with black squares and triangles traced outside, are not easily taken for houses in an Italian village, where many bear a painted fresco. Another point is that of securing pictures under favourable auspices, and here, because amateurs love their work, and are not pressed for time, they frequently succeed better than their professional brethren. We have before us, as we write, a charming little cabinet picture representing a scene in North Wales. The gentleman whose work it is essayed several times before he succeeded. In the foreground is the high road and a stone wall, with some sheep feeding by the roadside. There is a cottage beyond, and softly-outlined hills in the distance. The sheep are shaggy, and their wool is so soft and so clearly lined that you long to plunge your hand into the deep fleeces. The stone cottage is not very prominent, but its whitewashed front serves to light up the picture behind the sheep, and to lift them into prominence. Altogether the photograph is one of the most perfect we have ever seen. But in order to make it so complete, and secure the high light where it was, the picture was taken time after time, and in the end the photographer found he could not succeed to his satisfaction until he had taken the trouble to have the face of the cottage whitewashed, and thus avoid monotony in his landscape.

FRENCH CORRESPONDENCE.

NEW SECRETARY AT THE PHOTOGRAPHIC SOCIETY OF FRANCE—
M. LEON VIDAL'S IMPROVEMENTS IN TRAVELLING CAMERAS—
PAPER BY DR. VAN MONCKHOVEN ON THE PREPARATION
OF GELATINO-BROMIDE.

A LARGE number of the members of the Photographic Society of France have taken their departure from Paris to enjoy the pleasures and repose of life in the country; but they will regret not having remained to be present at the last meeting of the season on the 1st inst. This meeting turned out to be the most important of the session, chiefly in consequence of a communication by Dr. Van

Monckhoven on his new method of preparing gelatino-bromide emulsions.

New Secretary of the Photographic Society of France.—At the commencement of the meeting a change in the staff was announced by the President. M. Kosiell, who for a long number of years has discharged with great assiduity and intelligence the duties of Acting Secretary, has, in consequence of his being admitted a partner in the business re-established in Paris by M. Schembosch, sent in his resignation to the Society. In making this announcement, the President expressed the regret experienced by all the members of the Society at the loss of the late Secretary's services, and their great appreciation of their value, and M. Kosiell returned thanks in a few modest and appropriate words, upon which the President formally inducted the member who had been appointed to succeed M. Kosiell in the office of Acting Secretary.

M. Leon Vidal's Improvement in Travelling Cameras.—So soon as some of the subjects on the agenda paper not possessing any great general interest had been rapidly disposed of, M. Leon Vidal exhibited to the meeting a travelling camera into which he had introduced several valuable improvements. Chief among these are the removal of the ground glass plate, preserving at the same time the means of focussing with great accuracy, and an arrangement for reading exactly the size of the image formed on the sensitive plate as regards both its length and its breadth. These contrivances of M. Vidal will be found of great value to tourist photographers, who are often hampered by the wind in using the focussing cloth, and are prevented altogether from taking photographs if by any accident of travel their ground glass plate be broken. No attention has been paid to these special points in any of the portable cameras of which descriptions have been recently published, and for this reason M. Vidal has thought it opportune at the present time to bring his invention to the notice of the Society, although his description, which I give below in his own words, is merely a repetition of facts already known. As regards the arrangement for focussing, he said:—"The eye-piece, of which I show a model, is attached to a shutter which is adjusted to the back of the camera in the same place as is occupied by the external shutter of the slide carrying the sensitive plate. This eye-piece, combined with the objective of the camera, forms a regular telescope, by means of which distant objects are seen magnified and erect. To determine the exact position where the image would be depicted on the ground glass plate, a smooth glass plate, on which are traced with a diamond point several fine lines, is placed in the same grooves as are occupied by the ground glass. A view—or, better still, a page of printed type—is looked at through these lines, and the eyepiece is moved in its friction tube until the printed characters and the lines on the glass plate are seen simultaneously in exact focus. On the sliding tube of the eyepiece a mark is then made at the point where the outer tube ends, and this point is thus exactly fixed for all future focussing. It is true, only a part of the image is seen—that is to say, the central part—but in practice this is found to be sufficient." The arrangement adopted for determining the limits of the image in each direction M. Vidal describes as follows:—"On a wooden stage is fixed a graduated semicircle furnished with an alidada moving on a pivot at the centre of the semicircle, and carrying a reading scale at each of its extremities. A mark is engraved on the plate of the alidada raised above the exterior rim of the semicircle, the zero point being at its centre. By a previous trial with the ground glass plate the angle of vision of the objective is first determined, and when this is known it is only necessary to place the stage, either horizontally or vertically, on the walls of the camera, in order to obtain by a rapid glance the extension of the reflected image in every direction—to find its centre, its extreme edge, and

its height. For this purpose, the movable alidada must be brought on both sides of the zero point up to the degree indicating the half of the angle of aperture. The same stage or slide can carry both the eyepiece and the graduated semicircle. An eyepiece and a ground glass plate may be employed simultaneously, provided that a transparent space is made at the centre of the latter, as is shown in the instrument now exhibited. In order to be able, in case of any derangement of the eyepiece, to find the focussing point again quickly, I have covered the transparent space with very fine cross-lines drawn parallel to the sides of the plate at a distance of about half a millimetre from each other; the result of which is, that in looking across this network of lines, we have something equivalent to a plumb-line or a level, by which we can adjust the instrument so as to get all architectural lines in their correct positions; besides, the gradation in half millimetres affords a means of estimating with accuracy the dimensions which any portion of the image will have on the negative. By the aid of these appliances, the focussing cloth, as well as the ground glass plate, can be dispensed with; moreover, we can attain a degree of nicety in focussing, and a precision in the whole of the operation, which cannot fail of meeting the approval of all those who are anxious to meet with improved travelling cameras." This interesting and valuable communication, I may add, was received by the meeting with every sign of approval and satisfaction.

Dr. Van Monckhoven on the Preparation of Gelatino-Bromide Emulsion.—The meeting was concluded with a paper by Dr. Van Monckhoven, which the latter had entrusted to his friend, M. Leon Vidal, to read. It is so important and valuable that I have allowed no time to escape before sending a proof for publication in the PHOTOGRAPHIC NEWS (see below), in order that Dr. Van Monckhoven's views may be known in England. There can be no doubt that those views will be welcomed in the photographic world as a discovery destined to exercise great influence on the methods of working with emulsions which are now so much in favour. Dr. Van Monckhoven, who was himself present at the meeting, added some verbal explanations as to the details of his process. More especially, he pointed out the exaggerated notions that are entertained of the part played by the gelatine in emulsion photography, while it is really to the molecular condition of the bromide that the rapidity of action is due. He showed also that the great care to obtain an absolute white film which is always insisted on is quite unnecessary, for, as he states in his paper, the green films are in reality the best. Another very important point, in his opinion, is the chemical analysis of the water used in the process, in order to remove from it all substances which may have an injurious effect. In private conversation, Dr. Van Monckhoven mentioned some artifices which he recommends to ensure success in working his process, and gave all the advice and information that was possible in reply to questions put to him. The meeting then broke up, after acknowledging gratefully the services which Dr. Van Monckhoven has again rendered to the photographic art, which is already indebted to him for so many beautiful discoveries. K. VERSNAEYEN.

ON A NEW METHOD OF PREPARING GELATINO-BROMIDE OF SILVER.

BY DR. VAN MONCKHOVEN.*

In order to make what follows perfectly clear, let me first shortly recapitulate the ordinary method of preparing emulsions of gelatino-bromide of silver. I will take the method of Mr. Bennett, as it serves for a type of all others. Take 20 grams of gelatine and 7 grams of ammonium bro-

* Read before the Photographic Society of France at the meeting of the 1st of August last.

mide, and dissolve them in 250 grams of water heated to 32°C .; then add 11 grams of silver nitrate also dissolved in 250 grams of water at the same temperature, and stir well. This mixture is allowed to rest for several days (always being kept at a temperature of 32°C .) or for a still longer time, in proportion as an emulsion is to be produced more or less sensitive to light. It is then cooled until it assumes a gelatinous consistency, well washed to remove all traces of ammonium nitrate and all excess of alkaline bromide which it may still contain, and flowed over the plates, which are then put aside to dry. The latter are exposed in a camera, and then developed by what is known as the alkaline method.

This process I have studied with great care, and have observed the following phenomena:—1. If at the instant of preparation the emulsion be flowed over a glass plate, the film will be seen to be nearly transparent, notwithstanding the presence of the silver bromide which it contains in a finely divided state. The film is white and opalescent; in looking through it the bars of a window or any other object which is strongly illuminated will be plainly distinguished. But if the plate be coated with emulsion the day after the latter has been prepared the film will be much less transparent, and if the emulsion be used a week after its preparation a perfectly-opaque film will be obtained. Of course, it is understood that the emulsion must be well shaken before flowing it over the plate. 2. On examining the colour of the freshly-prepared emulsion, it will be seen to be a milky white; but at the end of a week it will be found to have turned a distinctly greenish white. 3. When films prepared with emulsions in different states of emulsification—as described under 1—are exposed to the light, those which are fresh and are white and transparent will assume the slaty blue colour characteristic of the haloid salts of silver more quickly than the others. The older films, possessing a green tint, will scarcely darken any further on direct exposure to the light. 4. What renders this latter experiment still more curious is the following fact, which is, so to say, its antithesis. White films, which change most rapidly under exposure to direct light, are slower to receive an impression in the camera, while the green films, which scarcely alter at all in direct daylight, are incomparably more rapid in the photographic instrument. From the circumstance, therefore, of a silver salt blackening rapidly in direct light, it cannot be inferred that it will behave in the same way in the camera.

I have the honour of exhibiting to the Society prepared plates in different stages of emulsification. The first ones, marked No. 1, are white and transparent, darken quickly in the light, but are very slow in the camera; the others, marked No. 2, are of a green tint, and opaque; they do not become darker in the light, and are eight times as rapid in the camera as the former.

In order to obtain an insight into the phenomenon which I have above described, I submitted the bromide of silver in its different molecular conditions to a long course of experiment, of the result of which I will now give an account. Silver bromide exists in two states: * in the first, which we will call the ordinary state, since it is well known to chemists, it is obtained by pouring a solution of alkaline bromide into one of an excess of silver nitrate acidulated with nitric acid, and then well shaking. By this means there is thrown down a heavy precipitate, which soon lumps together; it has a greenish-white colour, and turns grey on exposure to the light. The other modification is formed by dissolving this green bromide in ammonia, and then adding an acid; a bromide of a white colour and milky consistency is thus obtained, very light, and passing with ease through the finest filter. But if this milky fluid be allowed to stand for some days, it will deposit at the bottom of the test-glass a white bromide, which may be

more or less easily collected on a filter, and this bromide, on being exposed to the light, assumes the violet tint of the haloid salts of silver. Lastly, when this white bromide is left to itself for a long time, it becomes heavy and granular, and turns a greenish colour—in short, assumes the molecular condition of the green bromide.

These facts go to prove that emulsification consists in transferring into the green bromide the white bromide which has been formed in the substance of the gelatine. The particles of bromide are at first of extreme fineness; they have a tendency to reunite with larger particles, and then pass into the state of the green bromide—not heavy and curdled, but fine. What also tends to prove this is the fact that the emulsion at first possesses all the characteristics of the white bromide: afterwards, when it has ripened, it has the same properties as the green bromide. The transparency of the film at the outset shows that the bromide is in a finely subdivided state. Later on the particles become larger, and hence the opacity of the film to light. In many cases, also, the particles are visible under the microscope.

Carbon, when subdivided, gives similar phenomena. Take, for instance, some lamp-black, and beat it up in a solution of gelatine. A little of this liquid spread in a thin film over glass appears at first opaque, but in proportion as the churning is continued and the particles rendered finer, the film will become translucent, and finally transparent. Indian ink, which consists of carbon so finely subdivided that there is no deposit from its aqueous solution, is quite transparent, if a thin film of the solution be examined.

If, therefore, my views be correct, the greater the facility offered to the particles of bromide to coalesce, the quicker will be the emulsification. This is what happens when ammonia is added, according to Mr. Bennett's formula; the addition of ammonia transforms the white bromide into green bromide in as many hours as it would otherwise require days. On the other hand, the addition of a few drops of sulphuric acid retards the emulsification. The latter is also effected much more rapidly in solutions containing a small quantity of gelatine than in those which are more concentrated. The former are more liquid and mobile, and consequently permit the fine particles of white bromide better to coalesce into the larger particles of the green bromide.

According to this theory of emulsification we can lay down the most favourable conditions for the preparation of gelatino-bromide. The great defect of Mr. Bennett's method, and of those which have succeeded it, is due to the decomposition of the gelatine during emulsification, and to the long time required for washing the preparation. When the gelatine has been kept hot for any length of time it does not adhere to the glass, or if it do adhere, it does so very slowly. It often happens, in consequence, that after developing, the whole film curls up, and even detaches itself from the plate. Disasters of this kind arise from the gelatine decomposing. Moreover, the operation of washing is outrageously long and tedious, and requires an enormous quantity of water.*

The following method avoids these inconveniences:—I prepare very pure and dilute hydrobromic acid, and I determine accurately the amount of it required to precipitate exactly 10 grams of silver nitrate. I then dissolve this quantity of acid in 200 grams of water, with which I incorporate by heating $2\frac{1}{2}$ grams of gelatine. On the other part—and from this moment I entirely operate in the dark room—I precipitate 10 grams of silver nitrate by a very

* In a subsequent note I intend to return to this subject and the observations of M. Stas on the same.

* Captain Abney has recently made public a method in which he forms the bromide separately. He washes it, and then mixes it with the gelatine. He asserts that after a few hours the bromide is distributed throughout the mass. I have repeated this experiment accurately, according to the directions, and have also caused it to be repeated by others. On each occasion the film was completely granular, and full of large particles of the silver bromide, forming so many white points, which in the image were transparent. Time will show whether Captain Abney's method is practicable,

slight excess of bicarbonate of soda; I let it settle for twenty-four hours, and then renew the water to the same amount, after which I let it settle again previous to decanting. On this precipitate of silver carbonate I pour a hot solution of 2 grams of gelatine in 200 grams of water. This is well stirred, and then I pour on it the solution of gelatine and hydrobromic acid. The mixture is thoroughly shaken every quarter of an hour, and is kept at the constant temperature of 50° C. The silver carbonate dissolves slowly in the hydrobromic acid, and the silver bromide is formed in the colloidal liquid in a state of extreme subdivision. At the end of ten or twelve hours the mixture, when flowed over glass plates, has a greenish white colour. I next introduce 10 grams of gelatine, cut into very thin shreds, which I dissolve by stirring, and then, without washing the emulsion, I flow it over the glass plates.

In order to obtain a success with this method it is necessary to take some precaution. The hydrobromic acid must be free from phosphorus and sulphur; the water used for washing the silver carbonate must contain no trace of carbonic acid. This paper has, however, already exceeded its proper limits; I will, therefore, reserve the more minute details for a further note, which I intend to publish subsequently.

In an emulsion prepared by this method there is always an excess of hydrobromic acid and of silver carbonate, but I have satisfied myself by other experiments that the presence of these substances does not affect the results. This is not the case if carbonate be replaced by the oxide of silver; the emulsion is then grey, and gives rise to fogging. The plates that I have prepared by this method are twenty times as rapid as the best wet collodion, and, compared with the best English plates, I have found them to be three or four times as rapid. For the rest, the same observations and the same methods apply also to collodion-bromide.

ON THE USE OF BROMIDE EMULSION

FOR MAKING TRANSPARENCIES AND REPRODUCTION OF NEGATIVES.

BY JOHN CARBUTT.*

HAVING been invited by our friend Fitzgibbon to contribute something practical for his forthcoming "Practical Almanac," we give below our method of working the collodion-bromide emulsion process for making transparencies, either for magic lantern slides, decorative transparencies, or reproduction of negatives. It is for the latter purpose we chiefly employ it, finding it more certain, simple, and reliable, than the dusting-on process or carbon transparencies for that purpose.

In the making of the emulsion we have not much, if anything, new to communicate; but in the exposure and development, the all-important points in this work, a few notes from our experience may, perhaps, be of use to some who may for the first time essay emulsion work.

We recommend the unwashed emulsion; and if the reader will carefully follow our directions, we think he will find satisfaction in the result.

To Prepare Ten Ounces of Emulsion.

Alcohol, 95 per cent.	...	...	...	2 ounces
Double bromide cadmium and ammonium	...	...	...	90 grains
Cotton (Anthony's negative red label)	...	...	...	50 "
Ether, concentrated	...	...	...	6 ounces

We advise a larger quantity to be made in above proportions, and allowed to age before use.

To Sensitize.

Nitrate of silver	...	...	...	125 grains
Water	...	...	...	1 drachm
Alcohol	...	...	...	2 ounces

Put the alcohol in a two-ounce wide-mouth bottle, the silver and water in another two-ounce bottle; place both in hot water; when the silver is dissolved, add one and a half ounces of alcohol to the silver; keep in the hot water till silver is all dissolved; add it by degrees to six ounces of the bromized collodion, in a sixteen-ounce bottle; rinse out the bottle with the remaining alcohol, and add to the collodion; shake vigorously for a few minutes, and set away for two hours, then add two ounces more bromized collodion; after shaking up well, set aside for four to six hours; then test for free silver, by taking an ounce of distilled or ice water, and pouring into it about a half drachm of the emulsion; stir with strip of glass, and filter from the precipitate; into a portion of the clear solution, drop from one to four drops of plain ten-grain silver solution. If the emulsion is in correct condition, it will assume a faint opaline colour, showing a faint trace of free bromide, its right condition if no change of colour takes place; and if, on taking a fresh portion of the clear solution and adding a drop or two of a twelve-grain solution of bromide of potash, a change of colour takes place, it shows free silver in excess. This must be remedied by adding a few drops of an alcoholic solution of bromide of cadmium till the silver test shows free bromide. In this condition I find it to keep in good working order for months.

In preparing the plates, use as a substratum a solution of gelatine three grains to the ounce of water, and to ten ounces add two grains chrome alum; flow over the cleansed and moist plate as in using albumen.

Coating the Plates with Emulsion.—Shake the emulsion in the stock bottle, and strain into pouring bottle through cotton placed not too tightly in glass funnel; flow the plate with emulsion, and when set place in a dish of clear water. Several may be coated and placed in the water until the greasy lines disappear. Wash under tap for thirty or forty seconds, drain a moment, then flow over ale or beer that has stood some time to flatten; let the first application run off into the sink; apply a second portion, drain into cup, place the plate in a well varnished rack, in a light-tight box or closet to dry, either spontaneously or by warm air; when dry, place in grooved boxes.

Exposure and Development.—Lay a mask in the printing frame with an opening a little smaller than the negative to be copied; lay the negative on this mask, and carefully lay on the negative the prepared plate; cover with black or yellow paper; put in the back, and fasten down the cross-bars; carry out to the light (not the sky-light, but an ordinary sized window), and at a distance of three or four feet, uncover the frame for one to five seconds; return to the dark room, and place the plate in water for a few seconds. Have ready in dropping-bottles the following solutions:—

1.—Pyrogalllic acid	...	...	...	60 grains
Alcohol	...	...	...	1 ounce
2.—Fresh carbonate of ammonia	...	...	...	60 grains
Water	...	...	...	1 ounce
3.—Bromide of potassium	...	...	...	12 grains
Water	...	...	...	1 ounce

Instead of directing to develop by the ordinary alkaline method, &c., I will now describe minutely, for the benefit of those who may not be familiar with alkaline development—for this is the all-important point to make either success or failure of the result—the method I have found most successful with these plates. I now refer to the making of a positive suited to the reproducing of the negative. To one ounce of water, temperature not below 70° F., add twenty-five to thirty drops No. 1 and one drop No. 2. Mix

* *Practical Photographer Almanac.*

with strip of glass; take the exposed plate from the water, rinse under tap, flow over the pyro solution, and keep in motion on the plate, and if rightly exposed, a thin but fully detailed image will appear; keep on the solution till on looking on the plate the image appears fully brought out, the high lights slightly tinted; then to the developer add fifteen drops of No. 3; flow over and return to the cup; next add to it fifteen drops No. 2, and again apply to the plate until you see the image by transmitted light vigorous and intense, without, however, carrying it too far. Wash, and fix in either weak cyanide or hypo solution; carefully wash, and place in rack to dry. An under-exposed plate yields a dark, olive-tinted positive; a correct-exposed, a rich, warm, sepia brown; one over-exposed, a thin, flat, reddish brown. To reproduce the negative, repeat the operation of exposure and development, using the positive in place of the negative. In cases where increased vigour is desirable in the negative, modify the developer as follows: Water, one ounce; No. 1, twenty-five drops; No. 2, fifteen drops; No. 3, ten drops; flow over the moistened plate till developed. If more intensity is required, add ten drops more of No. 2 and No. 3, or, after the first development, wash and re-develop with acid pyro and silver; wash, and fix. When a negative is desired different in size to the original, it can be reproduced by transmitted light in the camera, using the ordinary wet collodion chemicals, taking care to give sufficient exposure, and a rather weak developer. In my own practice, I have adopted this method in preference to either the dusting-on process or carbon positive.

GUP.

THREE were some quaint old verses which I was set when at school to transmute into Latin lyrics, and which were composed of a series of happy exemplifications of the idea that constant repetition means ultimate success. "The sturdy rock for all its strength" is bored through and through by tiny drops of water, and so on, with, of course, an appropriate moral about the ultimate success of unwearied constancy in love affairs. Although doubtless in a less exalted and exalting sense, the same maxim obtains in respect to innovations in photography. Take gelatine as an instance. Several years ago I went into Mr. Kennett's to buy my first sample dozen of plates prepared by his process. I remember asking Mr. Kennett's assistant at the time, "Now do you really think that gelatine will ever supersede collodion?" and the answer was, "Indeed, I do." I own that I was sceptical; nay, more, that I was inclined to scoff secretly at what I thought was the mere outcome of a temporary mania. And now, by dint of unwearied research and constant application, gelatine-bromide has soared to a pride of place in gazing up at which my scepticism has been converted into great, though not unlimited confidence; my scoffing into considerable, though not reverential respect.

After the above preamble I might be fairly expected to evolve, by way of an excuse, a series of valuable and novel hints as to the practical working of the gelatine processes. I am afraid, however, that it is but another case of the mountain bringing forth a mouse. My lamp is of no new form, and I think Mr. Jarman would laugh at the marmalade pot (oh, bother the pun!) which plays a not unimportant part amongst my gelatine paraphernalia. Stay, perhaps some of you gelatine workers might—and in gelatine most things are wildly possible—discover some use in that unprepossessing vessel, the stone ginger-beer bottle. It has struck me that this ought to be even handier than the ink bottle suggested by another contributor.

Don't all speak at once, and should any recognition of this grand addition to photographic—ahem!—apparatus be deemed desirable, permit me to remind you that "Kaleidoscope," care of the Editor, P.N., would like by way of a commencement to have those nineteen half-sovereigns he

asked for the other day in behalf of the Photographers' Benevolent Association.

M. Vidal "slung an ugly left." I wonder, by the way, whether M. Vidal, good English scholar as he is, can turn this slang into idiomatic French at MM. Cros and Ducos du Hauron last week, *in re* the photo-chromie controversy. He also came down rather "stark" (that is good old English, *not* slang) upon his fellow-countrymen about their apathy in respect to the real interests of photography. Of course, such a charge would fall as dead as possible if even insinuated against English photographers. Oh, dear, yes! Do we not take in the PHOTOGRAPHIC NEWS, and perhaps belong to a photographic society, and isn't this equivalent to advancing photographic interests? Oh, yes, of course it is! But, I say, can you tell me your candid opinion, from a pecuniary point of view, putting aside all thought of art and such-like twaddle, whether it is worth my while to throw up wet collodion, and take up something new? Shan't I be advancing photographic interests if I do this? Oh yes, of course!

If only all photographers were to read, mark, learn, and inwardly digest all the good advice that is showered upon them so liberally from every side, what a science photography would be in a few years! And if only some of them would read what Macaulay says about *cant*. Not long ago I heard a country photographer canting away about the "vibration of light," serenely indifferent to the fact that these three words comprised his whole knowledge of that subject. The same ingenious individual informed me, with a look of conscious pride, that he was in the habit of using his toning bath *hot*. He merely dips in the print, and in a few seconds the trick is done. I looked at some of his finished prints, and believed him implicitly.

Ah, me! the woes of an amateur photographer! Oh! Mr. Kaleidoscope, do come and photograph us in our lawn tennis costumes. And Mr. Kaleidoscope comes, and spoils a lot of whole-plates, because Ethel will persist in giggling, and Maud declares that to hold a lawn-tennis bat without waggling it round and round, and finally dropping it on Florence's fragile foot, is quite impossible; and when at last the picture is secured—oh! the delight of receiving a succession of diminutive missives, enquiring petulantly as to when the prints will be ready, and "Mayn't I have! just one directly, to show to someone?" and so on. Oh brethren amateurs, follow my advice, and never print anything but proofs from your negatives. Give them to a professional printer at any cost, and talk of him just as Mr. Spenslow talked of Mr. Jorkings in *David Copperfield*.

Many thanks, Mr. Henderson, for your developer, and may you soon be successful in removing the slight uncertainty attached to its use, which seems to be its only defect. I am anxious, too, to hear Mr. Warnerke's formula for a durable developer, which he promises to make public at an early meeting of one of the Societies. What about Mr. Werge's method of keeping the ferrous oxalate developer? Here is a splendid field for advancing photographic interest, and one which will not, I imagine, be abandoned the moment it is entered upon.

I fear my readers will consider this a very bald instalment of "Gup." But it is their fault, not mine. If they will do more, I will gossip more, and I am sure the pleasure of being patted on the back in print, as well as the sweet self-consciousness that they are bettering photography and "Gup" at the same time, ought to be the best of all stimulants to, at any rate, the well-wishers (may their shadow never grow less) of

KALEIDOSCOPE.

The Photographic News.

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THE NEXT PHOTOGRAPHIC EXHIBITION.

FULL details of the arrangements for the Autumn Exhibition of photographs under the auspices of the Photographic Society of Great Britain are now accessible. The Exhibition, it appears, will be inaugurated by a *conversazione* on the evening of Saturday, October 4th, and will remain open daily—Sundays excepted, of course—until Thursday, November 13th. On Monday and Saturday evenings it will be open at half-price, thus affording all classes of assistants an opportunity of seeing the display.

The general restrictions as to the hanging of Oxford and inconvenient frames will prevail, and, indeed, the Hanging Committee will have the power of rejecting anything they regard as objectionable or undesirable. Whilst neat labels of subject, name, and address are permitted, anything approximating to advertising display will be rejected. Members of the Society will, as usual, be permitted to exhibit without charge; but non-members will be required to make a small payment toward the expenses of hanging their pictures. Until last year this Society had, with unexampled liberality, allowed all photographers not only to exhibit without charge or paying any share of the expenses of the Exhibition, but to compete for the prizes offered by the Society without paying entrance money. This was, so far as the Exhibition was concerned, obviously placing the members of the Society at a disadvantage, as they, by their annual subscriptions, helped to provide the prizes, and to pay the expenses contingent upon holding the Exhibition. Having had these points brought under their special attention, the Council last year resolved to make a small charge for space to non-members. A few protests were heard to the effect that such a course was "small," "illiberal," and "undignified." To all this the simple reply that it was fair and just is sufficient answer; and the same will prevail this year. That simple justice is aimed at may be seen by the liberal arrangements by which the charging plan is surrounded. In order that foreign photographers may not be deterred by such a condition, they are freed from its operations by the rule which, for the purposes of the Exhibition, regards foreign photographers as honorary members. Furthermore, it is arranged that should any of the exhibitors become members at the commencement of next session, the charges for space in the Exhibition will be remitted.

A new condition of some importance we are glad to see amongst the arrangements. It is to the effect that certain kinds of coloured photographs will be admitted. In the earlier exhibitions all photographs, whether plain or coloured, touched or unsophisticated, were admitted without distinction. Gradually grew a tendency to occupy a large amount of space with pictures which might probably have

had a photographic basis, a basis which was, however, entirely hid by a paint, so that the pictures were to all intents and purposes paintings by more or less—very often less!—skilled artists, and entirely devoid of photographic interest. To meet this manifest misuse of the Exhibition, the Council eventually resolved to exclude all coloured work from the Exhibition, confining it to that which was essentially photographic. This, of course, did not necessarily imply any disregard of the work of the artist in combination with photography, as some seemed to fancy when the edict went forth. It was simply a means of excluding trade displays of coloured work of no photographic interest, and very often without any artistic merit whatever. The new condition is as rigid as the old one in regard to such work. All photographs coloured by hand will still be excluded. But photographs coloured by scientific or mechanical means will be admitted. The last sentence as it stands may seem open to challenge. The carping critic may exclaim: "What! exclude pictures coloured by the hand of an artist, and refuse the thousands who visit the Exhibition the opportunity of seeing the perfect accord of photography and true art, and admit the work of indiscriminating mechanism? Despite, however, the apparent anomaly, the condition is a wise one. Photography is partly a scientific and partly a mechanical means of producing and multiplying pictorial designs, and methods of colouring which are analogous in their character may fitly be exhibited in the same gallery. Of late years, various scientific and mechanical methods of adding colour to photographs have been devised, and are worth encouraging, as essentially promoting photographic progress and prosperity. We think, therefore, the idea of opening the Exhibition to ingenuity in this direction is a happy one, and one of which we hope to see advantage taken in the forthcoming Exhibition.

Medals, as we have before announced, will again be offered for competition, the widest possible discretion being left in the hands of the Judges, who are to reward any form of scientific or artistic excellence which may be discovered in the contributions. The Judges are beyond challenge admirably well suited for the office. Mr. Marks, the well-known Royal Academician is one. Mr. Marks is, we believe, not only a painter of rare distinction, but a gentleman very familiar with photography. Mr. Oules, Associate of the Academy, is recognized as one of the very ablest portraitists of the day. The two members of the Council are Mr. Valentine Blanchard and Mr. John Spiller; the two non-official members of the Society are Mr. T. M. Brownrigg and Mr. G. Shadbolt; whilst the President is, of course, a member. These gentlemen will form a jury which we venture to believe will command the suffrages of every member of the Society.

MAGIC LANTERN NEWS.

THE magic lantern is very popular in America. A journal devoted to its interests, entitled the *Exhibitor*, is published in Philadelphia monthly. From this journal we make a few extracts which will interest some of our readers. Speaking of the magic lantern in Germany, we are told that Professor Bötcher, of Berlin, Germany, is probably the greatest lantern exhibitor in Europe. For six months in each year, beginning in October, he exhibits in the Royal Tragedy Theatre, enjoying the patronage of the Court. The lanterns are concealed behind the screen (of about 16 square feet), which medium is prepared in a solution that renders it very transparent, and causes it to hold the projections with remarkable clearness. The entertainment is announced as an instructive Soirée, and is in three parts: 1. *Travel* in which some one country is beautifully illustrated. 2. *Science*, in introducing the sun, or moon, or microscopic projections. 3. *Variety*, in which paintings, statuary, dissolving views, &c., are finely presented. The Professor's pictures are elaborately

painted in oil colours, frequently costing from \$50 to \$125 each, and never being valued at less than \$25. This magnificent collection of paintings and the instruments used for projecting them are worth about \$40,000, and their use costs the Professor about \$7,000 per annum, clear of all expenses.

Professor Böcher spends his six months of intermission in the preparation of new slides, to add to his already enormous collection; and these new scenes must be of the highest excellence in order to please the critical people of Berlin, who have learned to expect great things at the Instructive Soirées of the Dramatic Theatre Royal.

The use of the lantern at a masked ball is a novelty which was recently tried in Philadelphia. We are told that the "Canstatter Volksfest Verein" gave their annual masked ball at the Academy of Music, in this city, on February 19th. The attendance numbered about 4,000, and many novel features were successfully introduced. The vast parquet and stage were floored over, as usual on such occasions. At 8.30 p.m., a man attired as a magician advanced upon the platform, accompanied by a troupe of gymnasts attired as harlequins. The lights of the immense chandelier were turned out, the wall lights turned down, and a large screen hung before the curtain; and on this screen a long and varied series of crayon caricatures, comic slip-slides, ludicrous movable figures, and laughable scenes were projected in rapid succession by the magician, who very skilfully manipulated a pair of oxy-hydrogen exhibitors' lanterns. The harlequins imitated the various scenes in sounds and actions; the imposing magician displayed great dexterity, the audience laughed and applauded, and all went merrily until 9 o'clock, when all lights were turned on, and with music, tableaux, singing, and a grand march, the carnival of fun pursued its jolly way."

An article in *Frank Leslie's Illustrated Newspaper* describes the application of the lantern in singing lessons. Copies of the music, having been made by photography in the shape of slides, are thrown on the screen, so that hundreds may read the same score. Here is what *Frank Leslie* says: "Every Sunday-school teacher is fully alive to the ease of gathering children into classes as the holidays approach, and the difficulty of retaining them after the annual distribution of presents. Provisions have to be made constantly for attractions to draw the children to the school-rooms, and these in the course of a few months greatly tax the ingenuity and tact of the teachers. Pic-nics, excursions, and May-day frolics in warm weather; tableaux, stereopticon exhibitions, illustrated lectures, and concerts in the winter, follow one another as interest in the curriculum begins to lag; and still new devices have to be contrived when these features have lost their attractions. And in many instances entertainments arranged solely for the little folks prove so absorbing and agreeable to the children of a larger growth, that they pass from the Sunday-school room into the church itself. This fact is illustrated in a novel manner in Boston, where the throwing of verse after verse of a hymn upon a screen by a magic lantern, first adopted as a new idea in school entertainments, has led to the laying aside, temporarily, at least, of the hymn-book during the congregational singing in a number of churches. Where this innovation is made, there is no reason why one who can sing won't sing. The objections of having no book, or having left the book at home, or of eye-trying fine type, are annihilated. The apparatus requires but a small amount of space, and necessitates no disfigurement of auditorium or walls. It has already been found to please the old as well as the young, and there is no reason why the plan should not be widely adopted, particularly during the camp-meeting season."

A novel use of the lantern has been made on the Pennsylvania railway, where it has been made useful for drilling trains.

"At all railroad depots and junctions there are locomotives whose sole duty is the drilling of trains. This consists in running empty cars to and from sidings, breaking ariving trains into sections, and connecting these sections with de-

parting trains. Of course, this is being done all night as well as all day, and especially demands correctness and dispatch. In a prominent position is located the telegraph office, where the coming of trains and the distribution of the cars is announced by train officials from other stations; and these announcements must be conveyed to the engineers of drilling engines, who are always in waiting, and at some points almost constantly employed.

"They may be readily signalled by day, but until recently there has been difficulty in conveying the information with certainty and expedition by night. A number of experiments were tried on the Pennsylvania railroad at Harrisburg recently, with lanterns using various lights, and the following method was finally adopted as giving unexpected satisfaction. A piece of ground plate glass, 22 by 30 inches, was set in a commanding position, and on it was quickly painted in jet black letters the just received despatch:

Train 106—Due 12.05.

First 3 cars—Philadelphia.

Second 3 cars—Pittsburg.

Last 2 cars—Erie.

"An exhibitor's lantern was set up about six feet behind the plate glass, all of its lenses being removed except one of the condensing, which was placed with convex side outermost, so as to form what is called a lens box. The best double-wick coal oil lamp was used, and the message became clearly legible to the engineers 120 feet distant. The tanks for oil are made of extra large size; and two complete lamps, trimmed and filled, are sufficient for use throughout the night. The plate glass is readily cleaned off after the arrived train has been drilled, and another message lettered on it."

In relation to illuminating oils, we learn that the candle power of house gas is only 16 to 17, and that of the old lard oil lamp about 20; but the best double-wick coal oil lamps give from 34 to 40. Camphor dissolved in oil certainly whitens the flame, but the gum collects upon and hardens the wicks, so that it is but seldom used, except in trial exhibitions.

PHOTOGRAPHY AND THE DUTCH ARCTIC EXPEDITION.

BY W. J. A. GRANT.

IN attempting to write a photographic account of the cruise of the Dutch schooner *Willem Barents* to the Polar seas in the summer of 1878, I fear I have but little of interest to relate regarding photography, owing to the fact that the opportunities for going ashore were few and far between; and when we were able to land and work on shore, the weather was often so bad that photography of any sort was almost hopeless. However, we got between fifty and sixty negatives, including views in the north-west of Spitzbergen, Novaia Zembla, Bear Island, and in the ice between Spitzbergen and Novaia Zembla.

The ship *Willem Barents* is small, but admirably fitted for ice navigation, being extremely strongly built, and having every requisite for such a voyage as she was intended for. We had every appliance for deep sea sounding, for taking deep sea temperatures, and for dredging, and a large quantity of magnetical instruments under the care of Lieutenant Speelman.

We left the shores of Holland on May 6th, touched at Bergen, in Norway, a week later, where we remained a few days for some slight repairs, and then at once turned the ship's head towards Jan Mezen Island, and after a tedious voyage, with head winds and gales, sighted that island on June 8th. It happened to be a very fine, clear day, a thing that seldom is met with just at this part of the Arctic Ocean, and we actually saw the island—or, rather, the huge mountain—Beerenberg 112 English miles off. The island itself is long and narrow, rugged, with high-peaked hills, and at the north-east end rises the Beerenberg, nearly 7,000 feet high, almost straight out of the

sea. This was really a grand sight, and well worth seeing. The mountain was one mass of snow nearly to the water's edge, and the contrast between it and the dull grey-coloured sky and dark blue water caused a magnificent effect. We were, unfortunately, quite unable to land, owing to a strong gale having sprung up, and we reluctantly had to leave the island, as we could spare no time to wait for better weather. On June 17th we reached the main pack on the east coast of Greenland, and on the 18th were in sight of the north-west coast of Spitzbergen, having coasted along the edge of the ice all the way. The west coast of Spitzbergen is very beautiful when seen from off shore. Huge glaciers are seen pouring their volumes of ice through the valleys into the sea, and the blue-peaked hills, most of which are snow-capped, add much to the general grandeur of the scene.

On the 19th we anchored between two small islands on the north-west coast, called in the charts the Outer and Inner Norways, and near Cloven Cliff, a well-known landmark in these parts. In the old Dutch whaling days the "Outer Norway" was called *Leenwsehe Mitkyk*, "or Zeelander's Lookout," so named from the fact that it was from here the whalers of Holland used to watch the movements of the ice while anchored close by. At this place began my photography, and I must say the first results were not encouraging. Perhaps here it may be as well to say a little about my apparatus, &c., and the dark-room. On board a small ship it is hard to find any place where one can develop dry plates and work with wet, and I was lucky in getting what I did, namely, a little place right in the peak of the ship, in front of the men's quarters. As far as darkness went, I was all right; but the great drawback was the damp and a leakage in the deck above, and it was often with great difficulty that I could prevent salt water dropping into the bath, and many a plate have I had destroyed by water dropping on it while taking it from the bath or slide. The damp was so great that I left a negative to dry there once as an experiment, and at the end of three months it was no drier than when put there. A dark slide, left there for a few hours only, refused to open at all, and the whole place was so charged with moisture that, do what I would, at the best the work was not easy.

The great difficulty in getting satisfactory results is caused by the great amount of mist in these latitudes. You may get many fine days here and there about Spitzbergen, and in the Greenland Seas, Ballin's Bay, &c.; but in the sea between Spitzbergen and Novaia Zembla, and on the coast of Novaia Zembla, a day even fairly free from mist is very rare, so that one might be anchored for a week at any spot, and hardly be able to see anything all the time. This is often very provoking; but I must say I was often very lucky, just being able to expose a plate or two before the mist became really thick. Once in Novaia Zembla I remember having to remain by my camera three hours before I could expose, every moment expecting the mist to rise for a few minutes; and once I remained by it for more than four hours, and after that had to return to the ship unsuccessful. I had one fine day in Matotchkin Scharr in Novaia Zembla, and one fine day—or portion of one—at the north-west point of Novaia Zembla; one fine afternoon at *Leenwsehe Mitkyk*, and a fine day and afternoon at Amsterdam Island. With these exceptions the weather was always bad when I was photographing—mist, sleet, and a little rain, with dull gloomy-looking clouds for ever hanging over the hills, and causing a view, however fine in reality, to look heavy and desolate. I can fancy some magnificent photographs might be made in the north, if only one was able to remain long enough at one spot to make sure of getting a favourable day; but this is of course impossible in the case of an expedition ship, and often one has to rush ashore and back again without having time to choose one's view, or go the shortest distance inland. Of northern scenery,

Spitzbergen and the best coast of Greenland are, I think, much finer than Novaia Zembla, and I should never recommend any one to attempt to go to that miserable land for artistic purposes.

I worked the wet process when possible—e.g., when anchored near shore, or when amongst the ice—but most of the work was done with Liverpool collodio-bromide dry plates. I do not suppose I brought back a dozen wet plate negatives altogether. By using care, there is no difficulty in working these plates in the North, and as for the cold, I have not had much experience with it, because we never had it more than a few degrees below freezing point.

I found much difficulty in obtaining water fit to wash the plates, for there was nearly always some silt in the water used on board, and there was so much iron rust in it that it generally took some four or five hours to thoroughly clarify and filter enough for three or four plates.

My size was $8\frac{1}{2}$ by $6\frac{1}{2}$, ordinary bellows-body portable camera, with the wide-angle view lenses and rectilinear of Dallmeyer. Great care was taken with the double backs, which were always kept in an air-tight tin-case; without this precaution, the damp will invariably destroy them. For wet plates, everything as usual, only I found an old developer, several weeks old, work better, and even quicker, than one a day or two or a week old. Of this I had no doubt, as I made many experiments with both old and new. A candle shaded with non-aetinic silk was the light, and when in harbour my "dark-room" was, except for the damp, by no means a bad place to work in. At sea it was terrible, and very hard to work in, for, right forward as it was, the motion was very great, and it required more skill than I had to develop dry plates and prepare wet again. When working among the ice, one was repeatedly knocked off one's legs, while in the midst of developing, by the ship's frequent charges and collisions while forcing her way through the floes.

When we arrived at the N. coast of Spitzbergen there was very much snow on the ground, which made the walking very hard when carrying apparatus. Sometimes it was hard to get on at all, and once I was nearly two hours getting over some 300 yards.

The snow was mostly deep and soft; one might get on a few steps, and then down one would go up to one's neck, and perhaps come on the top of some sharp pointed rock; at other times, one has to plunge and toil along with the snow a good deal over the knees; at other times, one has to scramble over large loose pointed rocks; and at others, up hills which seem hopeless to climb, as all the rocks and stones are loose, and rattle down with you at every step. Now and then, hard crisp snow was met with, and then the walking was very easy.

We remained at *Leenwsehe Mitkyk* until the 23rd, which day was really fine; all the rest were miserable. We then steered eastwards in order to take soundings and serial observations near the pick; but on the 24th a heavy gale sprang up, and we had to lay to, and soon bore up for Amsterdam Island, a little to the south of our former anchorage, but the weather clearing we again made for the pack, though on nearing it found the sea too high to attempt to enter it, and so had again to turn away.

Being by this time near Welcome Point on the north coast of Spitzbergen, and as the sea was calm, some of us made an expedition towards the shore, which seemed about five miles off. I took my apparatus, hoping to get some good views, but we found the shore at least twelve miles off in reality, and were unable to get within two or three miles of it, owing to the ice; so we simply had to cook our dinner on the ice and return to the ship, having been absent all the day, my photographs consisting simply of groups on the ice, there being nothing more to do, and it not being

possible to photograph the coast, as the ice on which we were was in motion.

It would be tedious to your readers if I were to describe all the details of our working amidst the ice, &c., so I will simply say we arrived at Amsterdam Island on the 27th, and anchored in a fog, some two hundred yards from shore. We remained here until July 1st, and with the exception of one fine day the weather was miserable—snow, mist, and much wind, rendering photography almost hopeless. We found here an old Dutch burial place, and on many of the coffins inscriptions could still be made out, with various dates from 1635 to 1720. Two hundred years ago the Dutch used this island as their head-quarters during the whale fishing seasons, and the large number of rude graves show that many left their bones on this desolate shore. It was very interesting to see this place, and some of the bodies still had clothes on, and in some cases the hair of the men was on their heads, as though they had been but recently buried.

At midnight, just before we left the place, we all went on shore to the burial ground, where we had erected a memorial stone to these brave old mariners, and before leaving, the captain made a short speech to the men, who were all photographed in a group. The light was very bad, and a mist came on, so that nothing very splendid was the result.

Next day (July 2nd) we anchored further south—in Robbe Bay—to take in water, and while here we had too much mist to do anything in the way of photography; and in the evening of the same day we made for the westward, and on July 4th reached the Pack, and took soundings and deep sea temperatures in 1,360 fathoms. After this, we steered south, and on the 13th we reached Bear Island after much fog and general bad weather. Here we found some letters left for us by the Norwegian scientific steamer *Voringen*; and after remaining here for a few hours we made direct for Vardo, in the north of Norway, to post letters, &c.

Bear Island is a melancholy looking place, with one mountain called Mount Misery; all the rest of the island is bare and ugly in the extreme. I was only able to get two negatives here, owing to the mist.

After making a line of soundings and temperatures to Vardo (which place we reached on July 22nd), we steered north again, and by August 3rd were well in the ice in lat. $77^{\circ} 51'$ and long. $45^{\circ} E.$, and were unable to get further north. For ten days we were among the ice, and here I got a few negatives. On August 8th we had nearly reached 35° long., being in lat. $77^{\circ} 44'$, and here we were very nearly beset for good. From aloft, nothing could be seen but ice in all directions, and for some time our position seemed hopeless; but a northerly gale, which eased off the ice at the edge, came to our assistance, and by the 10th we were quite free again. We had run out through nearly 70 miles of loose heavy ice, and many a hard bump did the ship get during the time. We now steered for Matotschkin Scharr, in Novaia Zembla, sounding, dredging, &c., all the way, and after rather a slow passage, anchored there on August 21st.

Here we remained five days, and nearly all the time I was photographing during the day and developing through the night. With one day's exception, the weather was misty and bad.

We then coasted up the west side of Novaia Zembla, and were some days off Capes Nassau and Troost on the N.W. coast, where we landed and made observations, &c. The weather was so bad here, and the season getting so late, that we had to leave these latitudes; and after once more going north and meeting ice in lat. $78^{\circ} 17' N.$ and long. $55^{\circ} E.$, we made our way back to Norway, reaching Hammerfest September 26th, all on board being glad to get out of this sea of mists and fogs. We arrived in Holland in the middle of the following month, after a very successful cruise as far as the general scientific work was

concerned, though my special branch was not quite all that could be desired. On such an expedition there are so few opportunities for landing that it is quite impossible to make a large number of photographs; and the weather is generally so bad, that even when one can land the chances are much against anything being done. I was more fortunate than I might have been with the weather, and, by continual watching day and night, generally managed to get something each day on shore.

As I write, I am once more on the *Willem Barents*, and this time I fear the chances will be still fewer than during last cruise, for we have so much sounding and dredging to do in the Barents Sea, and, if possible, in the Kara Sea, on the east side of Novaia Zembla. We hope this year to reach Barent's Ice Haven on the N.E. coast, and there erect a memorial stone to one of the grandest pioneers of Arctic exploration.

Much work we hope to do in taking serials of dredging and magnetical observations, and if the Dutch go on as they have begun, they will probably, ere long, once more take the lead in Polar exploration, and add vast knowledge to general scientific research.

Vardo, Norway, June 12th.

EXHIBITION OF THE PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE following are the arrangements for the next Exhibition of the Society, which will be held at the Gallery of the Society of Painters in Water Colours, 5A, Pall Mall East, London, S.W. It will be inaugurated by a *conversazione*, open to members and their friends, at 8 p.m., on Saturday evening, the 4th of October. The Exhibition will remain open daily (Sundays excepted), from Monday, the 6th of October, until Thursday, the 13th of November. Admission (from 10 a.m. till dusk), one shilling. It will also be open every Monday and Saturday evening. Admission (from 7 to 10 p.m.), sixpence. Members will be supplied with tickets to admit their friends.

All packing cases must be sent (carriage paid), addressed to the Photographic Society of Great Britain, care of Mr. James Bourlet, 17, Nassau Street, Middlesex Hospital, London, so as to arrive not later than Friday, September 26th.

Pictures by hand will be received at the Gallery, 5A, Pall Mall East, on Friday, September 26th.

No packing cases can be received at the Gallery.

Each exhibitor must send a letter of advice (containing a description of each picture, as also a statement of process, and any further detail, to be inserted in the catalogue), addressed to the Hon. Secretary, Photographic Society of Great Britain, 5A, Pall Mall East, London, S.W.

Each frame or picture may have the exhibitor's name and subject neatly inscribed, but no address, or anything in the shape of an advertisement, will be permitted.

No pictures in Oxford frames, or any previously exhibited in London, will be admitted.

Photographs coloured by scientific or mechanical means will be admissible. Photographs coloured by hand will be excluded.

The hanging committee will have the power of rejecting any pictures forwarded.

Medals will be placed at the disposal of the judges, for artistic or scientific excellence.

The judges will consist of the following gentlemen:—

Two Artists (Painters), H. Stacey Marks, R.A., W. W. Oulless, A.R.A.; the President of the Society, James Glaisher, F.R.S., &c.; two members of the Council, Valentine Blanchard, John Spiller, F.C.S.; two members of the Society, T. M. Brownrigg, G. Snodbolt.

The Exhibition will be open to all photographers; but to non-members a charge of one shilling per square foot will be made for wall space; the minimum charge being five shillings. Foreign photographers will, for the occasion, be

considered honorary members. The charge for wall space to those exhibitors who may become members of the Society at the November meeting will be remitted.

L. DARWIN, Lieut. R.E., Hon. Sec.,
Brompton Barracks, Chatham, Jul, 1879.

SOME HISTORICAL RECOLLECTIONS OF PHOTOGRAPHY.

BY F. S. BEATTY.

"We are aware of Mr. Beatty's long connection with photography, and of his labours in connection with permanent printing which we have the pleasure at all times recognizing.—*PHOTOGRAPHIC NEWS*, September 16th, 1864."

My long connection with photography, a connection now entering upon its fortieth year, induces me to give a brief statement showing how far I have been instrumental in the infancy of photography of fostering and promoting its interest, which may be interesting and useful to those who admire and follow the art as a profession.

About this time, 1839, the scientific journals of all countries made the announcement that M. Daguerre, of Paris, had discovered a means by which the fleeting images of external objects depicted on the ground glass of the camera-obscura could be retained on a tablet of polished plated silver plate, and be permanently fixed thereon. Splendid specimens were exhibited in Paris of its architectural buildings, bridges, &c. The most distinguished and scientific men of that day were taken by surprise by the publication of so wonderful an invention, and intense anxiety was experienced by all awaiting the publication of the details. Although communicated to the Academy of Sciences the 7th January, 1839, the process was not published until the 15th June by M. Arago to the French Chamber of Deputies on the occasion of the French Government awarding to M. Daguerre, in conjunction with M. Isidore Niepce, each a pension for the discovery and publication of all details.

Ever watchful then, as well as now, to investigate into any new discovery that may be useful and beneficial to the advance of science or art, I resolved at once to exercise what ability I possessed to accomplish what M. Daguerre had discovered, and proceeded to work at the problem, being at the time an amateur optician, chemist, and careful manipulator (my profession being an engraver). After many failures and up-hill work, I was much surprised when I succeeded in my object to my entire satisfaction, as a letter of mine dated 20th September, 1839, published in the *Belfast News Letter* of that date will more fully show, which is annexed:—

From *Belfast News Letter* of September 20th, 1839.

THE DAGUERRETYPE.—On this curious subject, the following interesting letter has been addressed to us by Mr. Beatty, the well-known engraver of this town. We have also received the specimen to which he refers, and the effect noticed by him is extremely singular.

To the Editor of the *News Letter*.

SIR,—Being occasionally engaged since the announcement of M. Daguerre's extraordinary invention of fixing on silver, plated on copper, the minute images of external objects, produced by means of the camera-obscura, after a number of experiments, I was somewhat surprised to find, that in using silver paper, the effect was different from silver plated on copper, although treated in a similar manner. Silver plated on copper gives the true effect of light and shade—while silver on paper gives the opposite—namely, the light parts of the subject are dull, and the dark shades are, in a proportionate degree, light. In order to convince you of the fact I send you a specimen; but our days of late having been cloudy, you cannot expect it to be as perfect as I would wish. I hope before your next publication to be able to submit to you a specimen upon silver plated on copper, and silver on paper, in order that you may more completely understand the difference. Hoping that this communication may have the effect of promoting inquiry on the subject, I remain, your obedient servant,

FRANCIS S. BEATTY."

It is only now after the lapse of nearly forty years, in which I have had experience of many vicissitudes of fortune intermingled with pleasure for the love of our beautiful art, and which entailed upon me an less expense of time and money in endeavouring to promote its interests, and at a time when there could be no reasonable prospect of a return for the outlay. However, I can never divest myself of the pride I possess in having taken an active part in the infancy of this invention, and by my humble abilities aiding to bring it forward to its present state of perfection. I question whether there is any record of the successful accomplishment of a Daguerreotype picture in Great Britain at so early a date, September 20th, 1839, nearly three months after its first publication of June 15th, 1839.

In the *PHOTOGRAPHIC NEWS* of November 29, 1878, there appears a critical notice of a work (*Scientific Memoirs*, by John William Draper, M.D., L.L.D.), which, to me, is very interesting. I therefore take the liberty of quoting a paragraph. "In the early days of photography a galaxy of the most distinguished philosophers of the day were fascinated with the field for investigation and discovery which it opened out to them, and they devoted themselves to aiding in establishing the new art. Treasures of time, thought, learning, and experiment, were lavished on it by the most capable chemists and physicists of the period." Probably the only survivor of those who have prosecuted their researches with unabated ardour is Dr. Draper.

All I assume to be is that of an humble individual of a practical turn of mind not trained to scientific investigation. My authorship extending only to such matters as can be conveyed in a letter on a scientific subject in a periodical, and without wishing in the least to detract from others their merits of discovery, or their practical application of it into practical results. I think, from the facts I have already stated in this communication, that photographers will concede to me as proved that I had the good fortune of recording myself in the field earlier than any other person.

It was in March, 1840, that the first photographic portrait from life was effected by Dr. Draper as recorded in the *Philosophical Magazine*, and consequently nine months from the date of the publication of M. Daguerre's discovery.

In the latter part of 1839, and continued in 1840, Belfast, my native place, its architectural buildings, old long bridge, spanning the river Logan, was delineated by the Daguerreotype, executed by me, and were much admired by the nobility and gentry of the town and neighbourhood, and noted in the most flattering terms by the local newspapers of that day.

In June, 1840, Mr. Richard Beard patented in Great Britain the concave silvered mirror for the production of Daguerreotype portraits, being a communication from Mr. Woolcot, an American photographer; and being desirous of giving this method a trial, I immediately set to work to grind and polish a concave mirror of short focus in speculum metal, having previously ground and polished them for reflecting telescopes.

After considerable delay I accomplished my object, and in 1841 was enabled to produce portraits. Having communicated my success to Mr. Beard, he invited me over to London, and in the October of that year found me in the Polytechnic Institution, when I was introduced to Messrs. Cooper and Goddard. At this time Mr. Beard was establishing a similar institution in Southampton; he, therefore, desired me to take my part as an operator until he would come home. In the meantime he would examine my specimens, which he took with him.

So great was the excitement created in London amongst the nobility, gentry, and moneyed classes at this new species of portraiture which was then being produced at the Polytechnic, that during my stay the average amount of money taken each day amounted to, I was told, £150. However,

this included expensive cases, frames, and jewellery. In the waiting rooms of this establishment you would see waiting their turn to enter the blue glass-roofed operating rooms, the noble dames and daughters of England's aristocracy, accomodating each other as well as their limited space would allow, awaiting for hours together before their desires were accomplished. I venture to say that if our present race of photographers were to present to the domstics of any of our aristocracy portraits such as were supplied to the Polytechnic of that day, they would not accept them, so beautiful and cheap as they are now produced, showing the onward march of improvement.

On the arrival of Mr. Beard from Southampton, he mentioned to me his intention of establishing a Daguerreotype portrait gallery in Dublin, and that if I would accept of the operative management he would pay me a per centage on the work done. Having been in pretty good circumstances at the time, his terms did not meet my approval, and I therefore declined the offer.

The Parabolic glass mirror soon gave place to the original camera in consequence of the use of more sensitive chemicals being employed to sensitize the Daguerreotype plate in addition to simple vapour of iodine, bromine and chlorine were used.

Opticians of note applied their abilities to make lenses for the camera of Daguerre. The most successful were Voightlander, of Vienna, and the late Alexander Ross, of London. Photography now got a start in the right direction, and exquisite portraits were the result, the patented mirror was abandoned, and the art became free to all.

The glare of the silver plate was got rid of by subjecting the finished picture to the action of the galvanic battery, by depositing upon it a film of gold, which not only preserved it from atmospheric injury, but gave to the picture a warm flesh-coloured tint which had a pleasing effect, while the splendid detail made portraiture of that day unqualified at the present.

Their multiplication by printing being impracticable, their value was considerably enhanced by their cost, therefore, limiting their productions as a profitable commercial transaction.

In 1842, in connection with another, we built a gallery for Daguerreotype portraiture in a central situation in Belfast, which was carried on for a considerable time. However, the expense of a Daguerreotype portrait being above the means of the general public, we had to abandon the undertaking.

"It is not so generally known among our citizens as native merit demands that it should be, that the first person who introduced this new and beautiful art of imitating nature into Great Britain was Mr. Francis S. Beatty, of Castle Street, a gentleman whose talents in several branches of the arts are as varied as they are creditable. We have seen both portraits and architectural views produced by Mr. Beatty, which, in our opinion, could not be surpassed, either for accuracy of copy (which, however, is inseparable from the art), or for the ill with which the most minute details had been "fixed." His skilful public patronage is supported by abilities of which his fellow-classmen ought to be proud, independently of the credit due to him for his successful prosecution of the photographic art."—*Banner of Ulster*, 1842.

Mr. Fox Talbot's Calotype pictures were executed by me, positives from paper negatives; some of them are now before me at that date; a Daguerreotypist would not admire them. Time went on, and progress was slow, until Mr. Archer's collodion process was made public; this gave a new impetus to the subject, to portraiture as well as landscape, cheapening the process, and placing before the public a beautiful glass positive for a trifle.

Photography became at once an established and fashionable business, and, of course, I once more joined the profession. Then came the carte-de-visite or Albion portrait, followed by the cabinet, and enlargements of all dimensions, &c.

To be continued.)

Correspondence.

PHOTOGRAPHIC ARTISTS' SUPPLY ASSOCIATION.

SIR,—Your correspondent "Kaleidoscope" has made some mis-statements regarding the Photographic Artists' Co-operative Supply Association, Limited, which require correction.

Therefore let me state that the stores and offices of the P. A. C. S. A. are located in 43, Charterhouse Square, not at Goswell Road.

The P. A. C. S. A. neither pretend nor profess to be any other than ordinary traders, except so far as regards their working on the co-operative system. This system was adopted by reason of the heavy discounts (varying from 15 to 50 and 60 per cent.) which were offered to the promoters of the Association on the prices of most photographic goods previously to the opening of their stores, and also by reason of the co-operative system appearing to the minds of the promoters to be the one most fair to both buyer and seller.

This is the whole history of the little catalogue which has so excited "Kaleidoscope's" disdain. If you see anything in this which you consider unfair to competing traders, by all means let your correspondent point it out in your columns; otherwise "Kaleidoscope" will perhaps allow a strictly commercial concern to start untrammelled by prejudice, and to be judged of, like all the other photographic trading establishments, by the experience of the photographers who may be their customers, by whom alone they can be fairly judged.

Considering that "Kaleidoscope" candidly acknowledges that he does not know much about his subject, you will no doubt consider it but fair play to admit as many lines from one who can give yourself or your readers all information they may wish for.—I am, yours obediently.

H. KERR, Managing Director P. A. C. S. A. Ltd.
43, Charterhouse Square, August 7th, 1879.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF IRELAND.—The monthly meeting of this Society will be held at the Queen's Institute on Wednesday next, the 13th August, at 8 p.m.

THE HAIL STORM.—The hail storm which occurred in the west of London on Sunday morning was singularly disastrous to glass houses. We have received from Messrs. G. Tholy and Co. a design of a studio they have recently devised, and as the photograph was taken the day after the storm it presents the appearance of a building which has sustained a siege. We shall have something to say on the studio hereafter.

LANTERN EXHIBITION AT THE ALEXANDRA PALACE.—A correspondent sends us an account of a Sunday school festival, held in the Alexandra Palace, of which an exhibition of photographs by dissolving view apparatus formed a portion. The screen, we are told, was "twenty-five feet square, or, as described in the programme, illuminating over six hundred feet of canvas. The title was 'Beauties of Nature and Gems of Art.' Every photograph came out to the edge of the sheet sharp, clear, and without colour, and fully bore out the title given. Some two hundred views were passed through in the short time allotted (one hour) under a very careful manipulation. Messrs. W. H. Oakley and Co. gave this entertainment under trying circumstances, as the sun's rays could not be blocked out in consequence of faulty window blinds in the theatre. The light must have been very powerful to have counterbalanced daylight as it did. Messrs. Oakley well deserved the hearty applause they received from the delighted audience."

THOMAS A' KEMPIS.—Mr. Stock's long-promised facsimile reproduction of the autograph manuscript of the "Imitation of Christ" will be ready for publication in the autumn. A curious chapter of accidents has delayed its earlier appearance. Firstly, the brightest days only afforded sufficient light for

photographing in the quadrangle of the Royal Library at Brussels; then several of the negatives were broken in transit, and others had to undergo a special process after being taken, because of the dim and discoloured state of the original manuscript. Then the animal size employed in making the first batch of Dutch paper putrefied in the hot weather of last summer. Then twenty-five of the electro blocks were destroyed by a fire at the printer's, the entire reproduction of which was necessary. Lastly, the second lot of Dutch paper was spoiled by too much wetting, causing the ink to run in printing, and a third lot of paper had to be made. The relation is curious, as it illustrates some of the difficulties in the way of facsimile reprints. From some sheets we have seen we are glad to say every difficulty has been surmounted, and that the beautifully regular Latin manuscript of the original has been reproduced with perfect clearness.—*Bookseller.*

THE COMEDIAN AND HIS PHOTOGRAPHS.—Mr. Charles Roberts, the well-known theatrical and music-hall agent, of York Road, Waterloo Road, was summoned at Southwark by Harry Lester, an American comedian, for detaining a number of photographs of himself and wife in different characters. The complainant said that he and his wife were well-known in the United States as characteristic comedians, and having made up his mind to visit England, he sent by a friend a number of photographs of himself and wife in their various characters to be delivered to his wife's mother at Islington, and at the same time a notice to defendant to look out for apartments for him. By some error, his manager left the photographs with defendant's clerk, who said he would show them to his master, and afterwards forward them to their destination. About a fortnight ago he and his wife arrived in London, and he proceeded to defendant's, and finding the photographs had not been delivered to his mother-in-law, he asked defendant to return them, as they were necessary to forward to managers in the country to seek engagements for himself and wife. Defendant denied all knowledge of them, and as it was important he should have them, he was compelled to take the present proceedings. Mr. Roberts said that thousands of photographs were sent to him by actors and others in search of employment, and it was impossible for him to know where they all go to. They were forwarded by him to managers all over the kingdom in the course of business. He had no knowledge of defendant's photographs, and had gone through all he had, and could not find one that could be identified as belonging to the complainant or his wife. Mr. Slade told complainant there was no proof that defendant had the photographs in his possession, therefore the summons must be dismissed. He could, however, proceed against Mr. Roberts in the County Court to recover damages for the loss of the photographs.

To Correspondents.

B. L. M.—The troubles you describe are not uncommon in hot weather, and can only be met by the use of extra care and precaution. Keep the operating room cool by occasionally sprinkling with water. A wet cloth wrapped round the bath will keep it cool. Keep cool and calm yourself. Let dust be removed from the operating room every evening, so that none is left to fly about the room in the morning. Avoid the use of very strong solutions. A 30-grain silver bath, and a 15-grain developer, will be found quite strong enough.

A. DUFFER.—We fear that you really deserve the name you have adopted. How could you imagine that in order to neutralize a negative bath you should continue adding carbonate of soda until effervescence ceased? You have thrown down all the silver in your bath as carbonate, which may be converted into nitrate by means of nitric acid. The idea that you must add the soda solution until there is no more effervescence is altogether an error, as there will be constant effervescence on adding it until all the silver is precipitated as a carbonate. The proper plan is very simple. Make a 10-grain solution of bicarbonate of soda and keep it for use. Add of this a few drops at a time, shaking the bottle containing the silver solution, and then allowing it to stand a few minutes. Continue the addition until there is, after standing, a slight permanent turbidity, which will show that all the free acid has been neutralized, and a trace of the nitrate has been converted into carbonate of silver. Now place the solution in the sun for a few hours—or, if possible, a few days—then filter, and try a plate. It is probable that the bath will work clean and bright at once; if not, add a slight trace of dilute nitric acid.

YOUNG HAND.—You will find your collodion improve after keeping a few days. Newly iodized collodion rarely works so well as that which has been mixed a week or two. The early volumes of the *Photographic Journal* you have been reading are very useful and interesting, but very much experience in relation to collodion has been gained since that time, and different formulae are employed in its preparation. Whilst you may gain many useful hints from the volumes in question, you must not rely upon them absolutely for modern practice.

NORTH COUNTRY.—Personal attendance is necessary at Stationers' Hall to effect registration. It cannot be done by letter. Send to our publisher a copy of each print, with full details of title of picture, name of photographer, name of proprietor of copy, &c., with 1s. 6d. for each picture, and he will get the registration effected for you.

INEXPERIENCED AMATEUR.—Transparent spots are of many kinds, the most common being known as pinholes. Their causes are various, and have been much discussed of late in our pages. One of the most common causes is excess of iodide of silver in the bath. To remove this, pour the silver solution into double its bulk of distilled water, and then filter and make up the proper strength by adding nitrate of silver. The addition of two or three grains of nitrate of baryta to each ounce of solution sometimes proves a remedy.

IVORYTYPE.—The name has been given to various kinds of prints, but chiefly to prints made transparent and coloured at the back. It is not properly applied to pictures on opal glass. The two kinds of opal glass you describe are known as flashed glass and pot metal. The pot metal consists of opal material throughout its whole substance, whilst the flashed glass has only a surface coating of white glass or porcelain. The former, being translucent, gives a peculiar softness and somewhat sunken effect to the image. The glass termed cryolite is of American manufacture, where the material is found. The glass is produced in Philadelphia under the name of "hot cast porcelain," and, when made of pure cryolite, is milky-white in hue, and slightly transparent. Impure cryolite yields an opaque glass, closely resembling marble. The mixture for milky glass consists of—

Oxide of zinc	...	...	...	...	1 part
Cryolite	...	...	...	...	4 parts
Sand	...	...	...	...	10 "

This is melted in pipe-clay pots, which are not attacked by the fluo-silicic acid disengaged. The glass is very hard, remarkably solid, and is not attacked by strong acids, even when pulverized. These properties are doubtless due to the presence of undecomposed cryolite. With a small quantity of the mineral the glass is brilliant, and refracts light strongly; with a greater quantity it becomes opalescent; and, finally, on more cryolite being added, the glass turns opaque, and closely resembles porcelain.

J. GREEN, JUN.—As a non-member, you will have to pay a small charge for wall space. You will find particulars on another page.

PEARL-WHITE ALBUMENIZED PAPER.—We have received from Messrs. D. H. Cussons and Co. a sample of a very pretty albumenized paper, of which we shall have something to say in our next; as also of the Japanese cabinets designed as photographic accessories.

A. W. T.—You will find details of our own early method fully given in the *Year-Book* for 1866. In the volume of the *News* for last year, p. 196, there is a method, apparently a good one, described by M. Geynet.

Several correspondents in our next.

PATENTS.

COMPILED BY MR. F. DES Vœux,

Patent, Trade Marks, and Photograph Copyright Agent, 32, Southampton Buildings, Chancery Lane, London.

No. 2967. WILLIAM ROBERT LAKE, of Southampton Buildings, London. "An improved method of an apparatus for applying a gelatinous, resinous, or similar coating or covering to photographic plates and other articles." A communication to him from abroad by George Eastman, of Rochester, New York, United States of America. Dated 22nd July, 1879.

No. 2968. JOSEPH WILSON SWAN, of Newcastle-on-Tyne, Chemist. "Improvements in photographic printing." Dated 22nd July, 1879.

No. 2969. JOSEPH WILSON SWAN, of Newcastle-on-Tyne, Chemist. "Improvements in photographic engraving."—Dated 22nd July, 1879.

PHOTOGRAPHS REGISTERED.

Mr. J. BATEMAN, Canterbury,
Four Photographs of Miss Matilda Hacker.
One Photograph—Group of Matilda Hacker and Miss Eleanor Hacker.

Mr. HAMMOND, Ripon,
Photograph of Dean of Ripon, Rev. W. P. Freemantle, D.D.
Mr. SUTER, Cheltenham,
Photograph of Rev. J. R. Hughes.
Photograph of Rev. H. Shaw.

The Photographic News, August 15, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO. GELATINO-BROMIDE AND BICHROMATED GELATINES—THE ANNUAL EXHIBITION AND ITS REGULATIONS.

Gelatino-Bromide and Bichromated Gelatines.—There is a good deal of analogy between the exposure to light of gelatino-bromide and bichromated gelatine; that is to say, you are always in the dark—metaphorically speaking, of course—when you expose the first piece of carbon tissue or gelatine plate. In both cases you require a trial to test the light, and will require such trial until the time arrives when we are in possession of a delicate photometer, and have been able to fix upon a unit of light. If you ask a practised carbon printer how he decides upon the strength of the negative he is printing, and the number of tints that should be given, he will probably be unable to tell you; and although he produces a good picture, cannot lay down the law whereby another is to be secured. There is a good deal of groping in the dark, and, perhaps, some trust in Providence, in carbon printing, and it certainly is the same with gelatino-bromide. We do not know whether the latter varies in its sensitiveness day by day, according as it has been kept and according as the weather is moist or dry, as the gelatine tissue does, but we should think it very likely, and hence the photographer, like the student of algebra, has very often to work with two unknown quantities—the variation of light, and variation of sensitiveness. In our experience there is no better guide, both for the exposure and development of gelatino-bromide, than the treatment of a trial plate, just as a carbon printer begins his daily work with the development of an experimental bit of tissue. There is so much of the “*tuttoner*” element about the treatment of a gelatine plate in the dark room, that a guide of the slenderest nature is eagerly grasped. Mr. Mayland and Mr. Robinson, both of whom work the gelatine process with marked success, frankly admit that, like a clever, wayward child, they are bound to let the plate behave pretty much as it likes, and have to trust to its “broughtings up” to go straight and do the proper thing. You must be careful to do your duty, and the plate will then perform its obligation. The question as to the definition of foliage by a gelatine plate must remain an open question until we have learnt more about the film, for in the delicate matter of detail in shadows, the action of the developer is of considerable influence. But we must not forget this: that the gelatino-bromide gives more detail of the red end of the spectrum than the ordinary wet plate, and should, therefore, be more rather than less sensitive to the action of green leaves. For ourselves, we must admit, that in comparison made as quickly as possible one after another with wet plate and gelatino-bromide, the advantage, as regards detail in shadow, rested with the former; but then the superiority may have been due to the circumstance that we ourselves were more familiar with the working of one than the other. We repeat, we are, as yet, so much in the dark in developing a gelatine plate, that we should be careful how we lay down the law upon immature experience. Certainly, the makers of commercial plates have done their duty, and can scarcely do more for us. We get clear, brilliant films, and with an exposure that is wonderfully brief. We have secured a 10 by 8 landscape plate with half a second's exposure, using Dallmeyer's triplet, and have been compelled to dilute the ordinary Swan developer by half, for most of our work, so rapidly did the image spring up into being. For all that, however, gelatine films are not yet upon a satisfactory footing, not because of their imperfections, but because of ours. The taking of a trial plate is but a poor and clumsy expedient, after all, and photographers are in the same position as our engineers would have been had not the

electric telegraph been introduced at the same time as railways. We want a telegraph now to tell us something about the rapid goings on in the gelatine plate, and that telegraph is a delicate photometer by which we can measure the strength of daylight to a degree. Here is a field of investigation for the physicist, and one that ought to repay working, for could the photographer once get to know accurately the strength of daylight, one of the main difficulties connected with these rapid plates would be surmounted.

The Annual Exhibition and its Regulations.—We notice the Photographic Society will admit this year to their Exhibition “photographs coloured by scientific or mechanical means.” Opinions will be divided on the wisdom of this innovation, but we hope, at any rate, that the hanging committee will rapidly exclude everything of the nature that has not an essential novelty or element of excellence to recommend it. There are so many “processes” of colouring vamped up now-a-days that we fear the authorities will find their labour materially increased by opening the door at all. At the same time, the Society is acting more sensibly than it did last year, when coloured photography was said to be prohibited altogether, and yet admitted to the best part of the Exhibition. The vestibule and entrance to the large hall was hung with coloured photographs, to the astonishment of members as they tramped up stairs—pictures, too, which had been refused at a previous exhibition. The jury that has been nominated will, we think, command entire satisfaction. The painters, Mr. Marks and Mr. Oulless, could not have been better selected. They are both what may be termed photographic, or life painters, and as such should be admirably fitted to judge camera work. Mr. Marks' character pictures and groups prove him to be a master in posing and in seizing distinctive features in mankind, while Mr. Oulless's fame as a portrait painter is such as no one can gainsay. We are glad also to see that the Exhibition Committee have decided to allow themselves more time for hanging and cataloguing. It has been the rule hitherto to allow less than a week for these important duties, and the consequence is, that at the last a very great deal of work had to be performed at high pressure. This year, however, the last day named for receiving pictures is a Friday, while the soiree of the Society on the occasion of the opening falls on a Saturday. Usually, as our readers are aware, the day of opening was on a Tuesday, but we are not sure that a more popular gathering will not be secured on a Saturday; the main objection to altering the day seems to us that it changes the official one, which has always been a Tuesday. The name of exhibitor and the subject of the picture will be permitted on each frame, “neatly inscribed,” but no address, or anything in the shape of an advertisement, will be permitted. Those who intend to exhibit should, moreover, remember that there is very little time at their disposal. Scarcely six weeks will elapse before the 26th of next month, when pictures have to be delivered; and as there have been of past years more pictures than space allows for, some must inevitably be rejected, so that late comers will stand no chance at all. We have only to express a hope that the photographers of Great Britain will do their utmost to make the gathering a success, and that our friends in Europe who have so often lighted up our Exhibition with their work will assist us this autumn once again.

ON THE PRODUCTION OF COLOURED SPECTRA BY LIGHT.

BY CAPTAIN ABNEY, R.E., F.R.S.*

LAST year I incidentally mentioned in a note to the Royal Society (Proceedings, vol. xxvii., page 291) that the production of natural colours by the agency of light, examples

* A paper read before the Royal Society, June 19, 1879.

of which were shown by Becquerel, was probably caused by the oxidation of silver compounds employed. I have ventured to return to the subject in order to show that the colours are so produced, and are not due to interference.

I have sent, for the Society's inspection, pictures of the solar spectrum on silver plates, and also on compounds of silver held *in situ* by collodion. It will be observed that the spectrum has imprinted itself in approximately its natural colours; that on the silver plates it is more brilliant than on the collodion film, but that in the latter the colours are seen by transmitted as well as by reflected light.

I reserve for the present the exact details of the production of these pictures, but may say that they are produced by oxidation of silver compounds when placed in the spectrum: an exposure of two minutes being amply sufficient with a wide slit to impress the colours. The colouring matter seems to be due to a mixture of two different sizes of molecules of the same chemical composition, one of which absorbs at the blue end and the other at the red end of the spectrum, and the sizes of these molecules are unalterable whilst exposed to the same wave-lengths as those by which they were produced. I believe it possible and probable that the colours may be preserved unchanged when exposed to ordinary daylight.

THOUGHTS ABOUT THE NEXT EXHIBITION.

BY EDWIN COCKING.*

THE Annual Exhibition of the Photographic Society of Great Britain is so important in its bearing and results upon the outside world, that no efforts ought to be spared by the exponents of our art-science to render it so attractive that it should be as well visited as those exhibitions which are devoted to the higher branches of fine art.

To this end I propose making some observations containing hints and suggestions towards a further development of the resources of which we as a body are capable, and by which I believe we can make our Exhibition more entertaining.

In the first place, then, I would suggest that photographers should not so persistently devote their energies and skill to the production of what may be called set pieces, by which I mean a picture containing some special object as the central point of interest, which may be in itself totally deficient of artistic beauty.

I would suggest that more attention be given to the production of pictures affording a greater degree of artistic skill in the choice of subject and point of view. Our country is full of choice bits of foliage, and combinations of small growth of underwood, which, when studied as to the most effective lighting, would produce most charming and beautiful results. I think very much could be done in an instructional direction by the dissemination of successive stages in the growth and gradual attainment to perfection of our trees, and in combinations of foliage and the simple grasses which our country lanes exhibit; also in the distinctive beauty of form which flowers possess in almost endless variety, and in the grouping together of fruit and flowers, which are always pleasing when tastefully done. At the present moment the introduction of rapid processes should induce the attempt to perpetuate some of those evanescent, but at the same time most charming effects of light and shade which are ever to be found in our own land, and which arise from the constant variation in our atmosphere produced by passing clouds and other conditions of aerial transitions. Then, again, we should endeavour to get away from the routine of fixed sizes, which, like an iron vice, holds us in its grasp. A certain sized glass is used, and every subject

(whatever its individuality) must appear in that proportion. Now this is a matter which should demand the earnest thought, and bring out the latent artistic feeling of all photographers; for oftentimes a bit of a subject which, on a 10 by 8 glass, would be lost and utterly overlooked, would, if cut down to show its merits, become quite a totally different picture.

Another very important matter is the universal absence of figures in our photographic landscapes. In going through an exhibition of pictures, the emotions require quite as much food as the mind, and the public invariably respond to any appeal, however slight it may be, which enlists their sympathies; hence we ought to devise some means whereby figures or some human interest can be introduced into out-door photography. There are so many plans now in circulation to effect the introduction of subjects not taken in the original negative, that there should not be any necessity to hold back from experimenting in this direction. If a little more trouble and pains were expended on the introduction of figures, both human and animal, into many of our photographic productions, a very wide field would be opened for the exercise of latent skill on one side, and for a greater appreciation by the public on the other.

Too much is thought of the "oneness" of the means of producing a photographic picture, as if the ultimate result, both for the picture produced and the general public, consisted in its merit of being all done under one operation. We must get into the habit of looking at the "end," and not the means employed. As well might we distinguish between a picture taken on plate glass or on the commonest glass.

Then with respect to portraiture, how often is the remark made by thoughtful people that in looking at a collection of photographic portraits a feeling creeps over them that, although taken from nature, there is a great want of *naturalness* about them. I think that much of this feeling arises from the giving way too much to the supposed necessities of the tools we work with, viz., the lenses in requiring a complete flat field, we are so careful not to exceed certain bounds, that we thus get into a set way of confining all positions to this normal condition, whereas a little deviation from it, one way or another, is really of very little importance. If this be recognized, much more could be done in the direction of posing than has hitherto been the case.

Then, again, with the background. It is so easy to work with a plain dark background, that a vast of monotony arises from it. It has been said that in the regions of fine art the painter has derived a great impetus from the contemplation of the works of photographers. This is quite correct, for there was nothing before the advent of photography which gave to the appreciative student in art so much of the correct relative proportions of a figure, without the trouble of hard work and expenditure of valuable time in delineating the same. Artists having constantly before them these manifold revelations of the true, have engrafted that knowledge on their own perceptions, and therefore we now see detail in everything pictorial—one of the most distinctive marks of art in the present time.

But then, on the other hand, cannot photographers learn something from the study of what the painters are doing? I would especially call attention to the portraits in the present Exhibition of the Royal Academy; more especially to the backgrounds, which are becoming more and more unlike those of former years, when nothing but gloom and opacity surrounded the head. Now no hesitation is felt in introducing a variety of subjects as backgrounds; more especially foliage, which enables the artist to get more freedom of treatment in relation to the head.

In photography this could only be carried out either by a series of painted backgrounds executed by competent

* *Photographic Journal*.

artists (painted with the lights coming in from certain angles, so that the photographer could always adapt the background, or any part of the same, to the particular way in which he was lighting his sitter) or from negatives.

Then, again, there are very few attempts made in the production of pictures from costumes of various epochs, which in themselves possess most attractive qualities, both as to picturesque arrangement and effect of light and shade. Here, again, it is said the difficulty arises of getting a model to completely harmonize with the costume; but this is the very thing that ought to engage the attention of the photographer. He should find and adapt people as models, and exercise his latent perceptions in gaining experience as to what types and forms of figures and facial expressions arise from differences of structural conformation.

The photographer is not like the painter, who supplies from his own ideality any deficiencies of his model, but he is compelled to have everything before him before he can make an attempt at fixing the scene by chemical means; hence all must be well arranged and studied beforehand.

Photography must come to this some time or another, and all who can in any way stir up others to essay such experiments, or who can assist by hints and suggestions, will be helping on the progress of our art science, which, although dependent, to a certain extent, upon good tools (and therefore all steps in that direction are most valuable, and to be highly appreciated), must ultimately rest for due appreciation on its appeal to cultivated thought and feeling.

My object has been to set photographers thinking more of the artistic capabilities of their art science, which, after all, must be the side from whence the general public can understand and appreciate their productions; and it is just this quality which year after year we desire to see more cultivated, and I think it is only by exhibiting such works at our Annual Exhibition that we can hope to attain to the notoriety and consequent popularity which in the present day so quickly follow upon the exhibition of what is beautiful and artistic.

PHOTOGRAPHY AS APPLIED TO THE REPRODUCTION OF PLANS AND DRAWINGS.

BY DAVID TOWNSEND, B.S.*

(5) *Toning*.—By toning we mean giving colour or tone to the picture. The chemical theory is somewhat complicated, but depends principally upon the fact that when a neutral solution of some metallic chloride, such as gold or platinum, comes in contact with the washed print the chlorine leaves the gold and combines with silver, thus forming a deposit of gold on the picture. The chloride of gold is generally used for this purpose, and a normal solution is made by dissolving—

Chloride of gold and sodium	...	1 part
In dist. water	...	50 parts

This is kept in a bottle, and for every sheet of 20 by 24 in., 3 cc. are taken and mixed with 300 cc. of the following solution:—

Borax	...	1 part
Water	...	150 parts

It is sometimes convenient to keep a toning bath made up which can be used a number of times; in this case it should consist of—

Chloride of gold	...	1 part
Chloride of calcium	...	1.4 "
Water	...	4.564 parts

A little gold should be added from time to time, as the bath becomes exhausted. As nothing but small prints will require toning, a suitable porcelain dish should be provided and kept solely for this purpose.

(6) *Washing*.—This washing is merely to remove surplus toning solution, and is not very important. Five minutes in running water will be sufficient, and the waste need not be saved, as it is too dilute to pay for the trouble of extracting the silver.

(7) *Fixing*.—After removing all metallic salts, soluble in water, by washing, it is next necessary to dissolve out those still insoluble and remaining in the parts unacted upon, so that when the picture is finished and brought into the light, no change will take place. The solvent generally used is hyposulphite of sodium, or "hypo" solution, as it is technically termed. This salt has a peculiarity which should be remembered, namely, when in excess it acts as a solvent for salts of silver, but when the latter are in excess, the silver is precipitated as sulphide, which, when in contact with the paper, becomes black and insoluble. Great care must therefore be taken to have the hands perfectly free from "hypo," when silvering the paper or in afterwards handling it, otherwise black spots and finger marks will be produced. The fixing bath consists of—

a.—Hypsulphite of soda ($\text{Na}_2\text{S}_2\text{O}_3$)	...	1 part
Water	...	10 parts
Concentrated ammonia	...	$\frac{1}{8}$ part

Or,

b.—Saturated solution of hyposulphite	...	1 part
Water	...	8 parts
Saturated solution bicarbonate of soda	...	$\frac{1}{4}$ part

The alkali in both cases is used to neutralize any free acid in the solution, which would otherwise liberate sulphur and produce black spots on the print. I think formula (b) is preferable to formula (a), because the ammonium in the latter causes the paper to become very tender, and it is much more easily torn. The solution is put in a pan kept especially for the purpose, and the washed print transferred by taking two corners and lifting it carefully from the surface of the water. It is then let down as quickly as possible, and speedily covered on all parts with the fixing solution being careful to remove all bubbles. It is allowed to remain completely immersed for eight to ten minutes in warm weather, but if the bath is cold, a much longer time will be required. When the paper looks transparent the fixing is finished. The prints fade considerably in this bath, but regain some of their colour when washed and dried. The fixing solution must now be removed from the paper, or it will dissolve the image, and this is accomplished by the last operation to which the paper is subjected, namely—

(8) *Final Washing*.—The print, which is now very tender, is taken by the two shortest corners and raised off the fixing bath; it is allowed to drain thus for a short time, and is then carried to a pan kept especially for this purpose. The thoroughness with which this washing is performed will determine the durability of the picture. The prints cannot be washed too long, it being customary in photographic establishments to leave them in water all night; but for drawings, if the water be completely changed eight or ten times, it will suffice. In any case, let them be washed as long as the time will allow. The print is then removed and pressed between blotting-papers, which absorb all the surface moisture and make the print much lighter. It is now carried into a light room free from dust, suspended from a line by a spring clip, and left until dry. Care must be taken not to tear the paper, and thus spoil the work. When dry, the print is removed and trimmed, and is considered finished. The pieces of paper and trimmings should be preserved, as they contain silver, which may be extracted, or sold to dealers, who give nitrate of silver in return.

I have described this process at some length, believing it the best that can be adopted. It has numerous advantages, which will recommend themselves to all having much copying work to do. It is true, first cost is against it, but the results, especially for large work, are the best that can be obtained from any of the processes. We will now pass on to other methods.

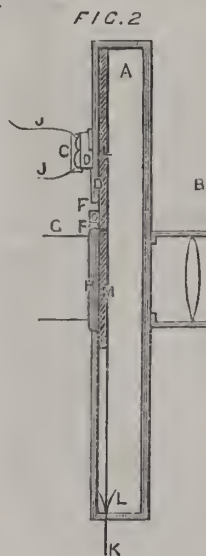
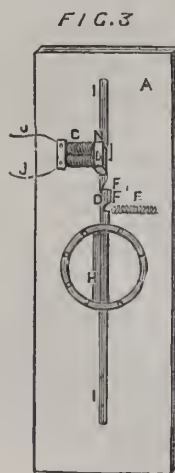
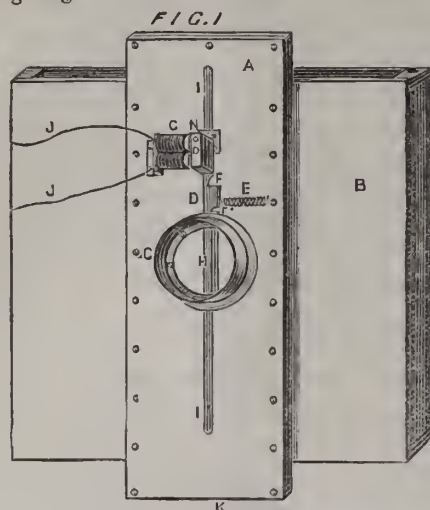
(To be continued.)

* Continued from page 364.

MR. SWAN'S QUICK-ACTING ELECTRIC LENS SHUTTER.

CAMERON SWAN writes to the *English Mechanic* as follows :

"As some of your correspondents have asked for an account of an instantaneous lens shutter, I will endeavour to describe one, invented and used by my father. The construction will be best understood by reference to the following diagrams :—



- A is the shutter box which screws on to the lens.
 B is the camera.
 C the electro-magnets.
 D the iron with the two notches in it, in which rest the pins which support the shutters.
 E the spiral spring.
 F the upper notch, which, when the current is not passing, does not support the shutter, which is supported by the lower one; but when the current passes, the notch supports the top shutter; the lower notch (F') which, when the current is passing, releases the lower pin in the lower shutter, and lets the shutter fall; but when no current passes, the upper shutter is supported.
 G is a lens screen made of brass.
 H is the part of the shutter which runs in the guide.
 I is a groove in the box.
 J J are the wires to battery.
 K is a piece of wire to push the shutters up with.
 L is the uppermost shutter.
 M is the lower shutter, made of thick cardboard, covered with a solution of lampblack and varnish.

The shutter apparatus is enclosed in a box made of fine cedar wood, which has an arrangement to enable it to be screwed on to the lens of the camera with which an instan-

taneous picture is to be made. Inside this box are two shutters or screens, which slide up and down inside the box, and run in grooves, well blacklead to prevent friction. A groove is cut through on the outside of the box, and to one side of it an electro-magnet is screwed, connected to a battery, the wires from which are furnished with a touch-button, in order to make and break the current. Working on a pivot, opposite to the electro-magnets, is a piece of iron (D) with two notches (F and F') cut in the lower part of it, and in these notches fit two small pins, which keep the shutters from falling; and a spring (E) is connected with the lower part of D, the piece of iron, and keeps it away from the electro-magnets when the current is not passing. When the touch-button is pushed, the current passes, and lets fall the lower shutter by drawing away the prop (F'); and while the current passes another prop (F) is put under the upper shutter (L'). But as soon as the current does not circulate in the magnets, the spring (E) asserts its power by pulling away the other prop, and letting the top shutters fall and cover the mouth of the lens.

ON THE MAIN DIFFICULTIES OF THE CARBON PROCESS.

BY D. VAN MONCKHOVEN.*

MANY photographers who begin working the carbon process obtain generally good results at first, and then, when they meet with difficulties which they do not succeed in overcoming, give it up. There is no process, however, which is as simple and as easy, when a knowledge is obtained of the means of overcoming the difficulties it presents. I will give here some of the main points to be observed to insure complete success.

The Negatives.—The negatives used for printing in carbon should not be very intense in warm climates, and can be much more so in cold climates, for the following reasons. All negatives, thin or vigorous, within certain limits, can yield good carbon prints when the strength of the bichromate solution is adapted to them. Thin negatives require a weak bichromate bath, as low as 1 or 1½ per cent., to yield vigorous prints. Now, the principal difficulties which the carbon printer meets with are the spontaneous insolubilization of the pigmented tissue, and reticulation. These defects are most often met when the bichromate solution is strong. In hot climates, thus, weak bichromate solution and thin negatives should be the rule.

For cold climates, there is an advantage in using strong negatives, because in winter, when the light is bad, strong bichromate solution can be used, and the printing can be done rapidly. I believe, however, that, take it all in all, thin negatives are to be preferred, because they can easily be retouched. With such negatives, a solution of one per cent., or even less, is of sufficient strength.

A well known photographer recently began printing in carbon. His negatives were very thin, and I recommended him to use a one per cent. bichromate solution. He had no difficulty whatever during the summer, and with him carbon printing works as regularly as silver printing did, and with results just as fine as those he used to obtain on albumen paper.

Formula for the Bichromate Solution.

For weak negatives use—

Bichromate of potash	...	1 to 1½ ounces
Cold water	...	100 "

For strong negatives use from 1½ to 3 ounces of bichromate. In winter add one drachm of carbonate of ammonia, and in summer two drachms. This addition is indispensable, unless one uses the pure chromate. The ammonia makes the solution alkaline, and does not combine, as it was supposed, with the chromic acid. Alkaline solutions are indispensable in the carbon process, for acid solutions cause the tissue to become insoluble.

In summer, during the hot weather, change the bath twice a week, even if it should not be used every day. Old baths yield weak and flat prints. It may happen that a photographer succeeds with an old bath, but it may give away all at once, and then he finds that the tissue does not adhere, the prints are weak, and he is at a loss for a remedy. A new bath is made, and everything works right.

The bichromate solution should be kept cool, and should be filtered before use. The sensitizing, also, should be done in a cool place. The paper should be kept in the solution about three minutes, and should then be laid on a glass and squeezed lightly to get rid of the excess of liquid. If the squeegee is used too vigorously, there will be a loss of the half-tones in developing. The removing of an excess of solution is principally recommended in summer, otherwise the gelatine is apt to soften and to run.

If the tissue is left too short a time in the bichromate solution, the action is unequal, and the prints are covered with waves. If the heat is so great that the gelatine shows a tendency to run, lay the tissue flat on a cardboard, and allow it to dry in that position. You can also put it in alcohol for two or three minutes, and then hang it up to dry. The alcohol can be used several times.

Dry the paper rapidly in a draught. This is an essential point. If the paper dries slowly, it becomes insoluble and does not adhere to the transfer paper or the opal glass, or in developing the image becomes detached in parts. It is also difficult to remove the original paper from the transfer, and the development requires very hot water. The gelatine has, in fact, become partly insoluble. This, one of the main difficulties connected with carbon printing, is avoided—first, by the use of weak bichromate solutions; second, by drying the paper in a draught. To establish a current of air in a room, make a fire in it (even in summer) and open the windows, when you can dry your paper during the night.

Reticulation.—Reticulation is produced principally in summer. It is a kind of grain or net-work which covers all or part of the print, and destroys all definition. To avoid it, use weak bichromate, and immerse in very cold water before transferring it to the glass. It is important that the absorption of the water by the gelatine should be slow, and the colder the water the slower the absorption. Have, also, an abundance of it, so that the tissue does not come in contact with the warm air. The water in which the collodionized glass or the transfer paper is dipped may be at the ordinary temperature. The temperature of the water in which the tissue is immersed previous to making the transfer should, in summer, be below 50°; for the temperature of the water absorbed in the texture of the tissue is raised by the tissue being exposed to the hot air.

Note by the Translator.—It is necessary that the reader should know that the process of fuming with ammonia is not used by European photographers, and that paper not fumed requires slightly more intense negatives. The thin negatives that the Doctor refers to are not as thin as those made by a large number of American photographers, who use the double gloss albumen paper, and fume their paper with ammonia.

CHANGES IN PHOTOGRAPHY.*

THE substitution of dry sensitive plates for the common wet plates has made great progress during the past year or so; the old cumbersome method of dipping a collodion-covered glass plate into water containing nitrate of silver, then taking the picture before the plate has time to get dry, is becoming obsolete both for indoor and outdoor work.

Dry plates, having a sensitiveness equal to or exceeding of wet plates, are now easily prepared, and their convenience and economy have been fully demonstrated. The travelling photographer no longer needs to load himself

down with water bottles, liquids, and bath apparatus. He simply provides a few slips of prepared dry glass, with which and a light camera he climbs to the difficult places and secures the views he wants. The gallery artist is no longer obliged to waste his business time in waiting for the preparation and development of wet plates after his customers have come; but he may now both prepare and develop the dry plates out of business hours, and thus attend to two or three times as many sitters as heretofore. These dry plates may be kept on hand ready for use for an indefinite period.

At the present time, gelatine is the base used as the skin with which to cover these plates. The gelatine is dissolved in warm water, bromide of ammonium is added, and the mixture is digested with heat. A solution of nitrate of silver is then added, and the mass is thoroughly mixed and cooked, being kept at a uniform moderate temperature for four or five days continuously. The mixture is then poured on the surface of the glass plates, dried in the dark, and the plates are ready for use. Such plates require an exposure of only two or three seconds in the camera in order to take the picture. If greater sensitiveness is wanted, then the gelatine silver mixture must be kept under heat for seven or eight days instead of four or five. This is a very curious fact. Why the sensitiveness is increased by prolonging the time of cooking has not yet been ascertained. The development of the picture is effected by the use of a solution of pyrogallie acid followed by a solution of ammonia and bromide of potassium. The results produced are said to be in all respects excellent.

SPIRIT PHOTOGRAPHS.*

FOR some time, a certain class of newspapers have abounded in marvellous tales of spirit photography, the work of a lady photographer of Rochester, N.Y., assisted, of course, by the ghosts of her clients' ancestors and departed friends.

Recently, two lady sitters were impressed by the old-fashioned yet familiar costume and aspect of the spirits attending them in their pictures; and set to work to trace their probable pre-spirit history in the pages of an old magazine for ladies. The search was successful, the original of one of the spirits proving to be an engraving entitled *Nourmahal*, and the other, *The Last Rose of Summer*. No doubt the spirits can give good reasons for masquerading in those particular costumes, but as yet they have failed to do so.

The photographs and engravings fell into the hands of a representative of the *Rochester Union*, who, in order to ascertain the process by which the ghostly picture was printed beside the sharply-defined portrait, submitted them to a photographer who does not deal in spirits. The process was practically illustrated, and explained as follows:—

A negative is first taken of the engraving. When the sitter comes for a picture the negative is turned the other side, the collodion put on, and the glass put in the camera. In this manner, the portrait of the sitter is on one side of the glass, and what is intended for the spirit on the other. When the negative comes to be printed, the paper is placed against the side of the glass having the portrait of the sitter, and exposed to the light. The spirit, being on the other side of the glass, has to strike through it, which gives it the hazy appearance, while the portrait, being on the other side next the light, comes out clearly defined. Any one who is desirous of doing so can test this for himself, and the illustration shown by the photographer explained the matter fully to the eyes of the inquiring newspaper man. The more artistic a photographer is, of course, the more unearthly he can make the work, and the gentleman in question said he could produce a picture of the most ghastly description.

* *Scientific American.*

The Photographic News.

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THE BUSINESS OF PHOTOGRAPHY.

WHETHER photography be a fine art or not, it is certainly a business. And whilst it owes much of its initiative and much of its progress to amateurs, it is to its value as a business, as a means of making money, it owes its present influential position and the rapidity of its progress. In an article in one of our American contemporaries, the writer asks why so few photographers make money? We need not stay to consider the various causes he adduces, inasmuch as we are disposed to demur to the truth of the proposition involved in his question. It is quite possible that few photographers may become millionaires. As yet few photographers are in a position, it is true, to relate the old story of having reached London on foot at the age of twelve with twopence as sole capital, then entered a warehouse as errand boy, progressed through every position in the house, finishing as senior partner, and Lord Mayor of London! But there are many photographers who have acquired handsome competency upon which to retire, and still more who have made sufficient competency without any wish to retire. Probably there are very few cases indeed in which a photographer has earned less by the exercise of his business as a photographer, than he did by the trade or profession which he abandoned for photography. By the investment of a very small amount of capital, the exercise of a reasonable amount of photographic skill and artistic taste, and the use of ordinary business tact, many photographers have made very comfortable incomes, and some have made fortunes. Even in these days of general depression and active photographic competition, we know of illustrations of what we have just written. A case occurs to our memory—we mention no names, nor do we give any clue or indication—in which, in an establishment commenced within half-a-dozen years, a sum of little less than four hundred pounds was the amount of a recent week's income! The principal, it is true, is a gentleman of business tact and close personal application to business, as well as photographic ability. We mention the circumstance to illustrate the fact that at a period of unexampled photographic competition, and dullness generally, when no money is supposed to be stirring, it is possible, by the exercise of the proper qualities, to make very handsome incomes and accumulate fortunes in photography.

But to make money by the business of photography, it must be regarded as a business, and the same business tact and application, *mutatis mutandis*, will secure the same

results in this as in any other business. Our able correspondent signing his letters "Mass" has pointed out some sources of failure. He has insisted on the fact that small businesses do not pay; that, in other words, the attempt to establish a business without the fitting capital and appliances will not command business success. An operator is very naturally anxious to exercise his profession on his own account, and commences in a very small way. He practically, in fact, exchanges one employer for many. The public becomes his master, but he (the workman) must pay rent and provide appliances for conducting the business. In some cases, with great ability and much industry, and not a little privation, such an attempt to establish a business succeeds. Very often it fails, and the photographer lives a struggling life and becomes a soured man. We do not deprecate such attempts—scarcely so much, indeed, as we think "Mass" does. We think the attempt praiseworthy, and have every sympathy with it. But in attempting to establish a business in such conditions, especial care and skill are necessary to success, and special avoidance of the traceable causes of failure. We may mention a few of the latter. One of the most common causes of failure under such circumstances is yielding to the temptation to do a low-priced and necessarily common class of work. As a rule, low-priced work must be common. Materials and appliances generally must be common, and less fastidious care can be bestowed upon the work in all departments than can be given to work which is well paid for. Good work sent out is a perpetual recommendation, and the best aid towards forming a business; while poor work is seen and examined by many without any reference to price, and is therefore no recommendation. Another cause of failure to which some photographers are especially liable, especially those who very properly put a high estimate upon their profession, consists in unwillingness to see their sitters before sitting, to enter into business explanations. They feel that making any arrangement of a business nature is beneath the position of an artist, and leave such matters to the attendant in the reception room. This is very right. Such attendant is the proper person to make such arrangement. But there is a large class of sitters who are unwilling to be dealt with in this fashion. They have an invincible desire to see the principal, and make arrangements with him; and the photographer, if he possess skill and tact, may materially promote and cement his business connection by readily acceding to such desires amongst his sitters. Another of the causes of failure common to, and apt to be overlooked in, small, struggling businesses consists in a tendency to be negligent and slovenly in regard to specimens and show-cases. The cases and frames get old and shabby, the specimens old and out of date, and at times even a little faded. The entrance and reception room grow shabby and dusty, the latter suggesting its frequent use as a family sitting room as well as a reception room. It is surely barely necessary to name these things to point out that they are thoroughly in antagonism to the spirit of business, and a natural cause of business failure. Our correspondent, "Mass," says that small businesses do not pay. We think he is right. Even if carried on with perfect business care, they cannot pay as well as large businesses. But it is chiefly because they are especially subject to the causes of failure we have named, and others of a similar kind, that they are not only less profitable than large businesses, but that they are frequently failures. One of the prevalent faults in a small business is unpunctuality and delay in completing orders. An operator may be most skilful in photography and artistic in taste; but he may have no idea whatever of the importance of business punctuality; and the lack is fatal. Whether he commence business on his own account, or be the man-of-all-work in some small establishment, this unpunctuality in completing and sending home orders must prove fatal. We have known very capable photographers wreck their whole

fortunes on this rock, struggling on in shallows solely from this cause. Success depends upon attention to a number of trifles almost impossible to recount. A large number of these trifles are summed up in the word precision: precision as to time in sending home orders; precision in finishing work, and carrying out all details of instructions given. We have frequently asked successful photographers to what especial thing they owe their success. Unfortunately, the qualities which have secured success are often so natural to a man that he is scarcely conscious of them, and cannot often enumerate them. One very successful man said he thought it was partly due to being very fastidious, and never suffering a print to go out that did not please himself. This was one of the elements of the precision of which we speak. We have no intention, however, to write a didactic essay, but merely to recall a few hints which may be useful in connection with the subject.

MODIFICATIONS OF THE ALKALINE DEVELOPER.

THE effect of varying the proportion of pyrogallie acid does not seem to have obtained sufficient attention in the use of alkaline developing solutions. It has certainly been less regarded than it used to be in the old acid developers. We remember some instantaneous negatives on Fothergill plates, which were developed with a twelve-grain pyro-solution, containing also four grains of gallic acid. Col. Stuart Wortley has often insisted on the importance of increasing the proportion of pyro in securing intensity. He has recently communicated to the Society's Journal details of an article on the subject which was printed in one of the journals in 1874. He says:—

"The difference to be found in the use of developers of various strengths is a subject to which sufficient prominence has not hitherto been given; and while much has been written on the component parts of an emulsion, but little notice has been taken of the fact that with the same emulsion, or same bath process, an endless variety of negatives or transparencies can be produced, and thus to those who use a strong alkaline developer the following hints will be of use:—

"If your negatives are coming too dense, reduce the amount of pyrogallie acid in your developer; if your plates, on the contrary, are wanting in density, increase the strength of the pyrogallie acid, adding, in the latter case, a drop or two more bromide to control the increased energy of the developer.

"The plate is very nearly as sensitive with a weak solution of pyro as with a strong one, and the development is under great control, as by adding a few drops of pyro, from time to time (having commenced with the maximum of strong ammonia), the plate can be worked up to any required density. When liquid ammonia is used in the developer, the pyro and bromide should be applied to the plates before adding the ammonia to the developing solution.

"A modification that I have found of great value during the past summer has been the use of a preparation of gelatine in the alkaline developer. It enables one greatly to reduce the amount of bromide, and indeed, if necessary, to dispense with it altogether, as the gelatine has a great restraining power over the action of the ammonia, and does not, as bromide does, interfere with the production of detail. Gelatine also gives a beautiful deposit on the negative, and anyone having once used gelatine will, I think, adopt it for his future work.

"Tannin and gallic acid can also be used in the developer to replace bromide; but the quality and character of a negative developed with gelatine make me prefer that substance to either of the two last mentioned. You will remember that when gelatine was added to the iron developer some years since, it tended to produce a harder and denser negative than one developed with the ordinary iron developer, and, moreover, the plate required a longer exposure in the camera.

The action of gelatine in the alkaline developer is, as nearly as possible, the reverse of all these conditions.

"Another subject which I worked out is fuming by ammonia as a means of developing dry plates, and with the gelatino-bromide process I find great advantage in its use.

"The less a gelatine film has to do with water the better; and I prefer to develop a gelatino-bromide plate by pouring on it, to commence with, a developer composed of glycerine and water, or gelatine and water, and to which the necessary bromide and pyrogallie acid are added as usual. It is then put into the box and fumed, and a brilliant and perfect image very rapidly appears."

BLOOD ALBUMEN ON FOREIGN PAPER.

FOR some time past rumours have been rife to the effect that blood albumen was used in preparing some foreign photographic papers, and that various printing difficulties and final fading were the result. We have received various letters asking if it were true that blood albumen was used instead of egg albumen, and on one occasion we received a very abusive letter from the agent of a foreign house for having allowed an allusion to "such an absurd impossibility," as he alleged this to be. We have no means whatever of investigating the practices of manufacturing houses in preparing albumenized paper or other photographic materials; but we may remark that if blood albumen were used we have no reason to believe that the paper would be in any way the worse for it. Egg albumen and blood albumen are chemically and physically identical, a little deeper colour being the only distinction of the latter. Some remarks at a meeting of the Chicago Society by the Secretary will interest our readers:—

"Some time ago, in the published minutes of one of the German societies, I saw a brief mention by one of the members of a suspicion that some of the manufacturers of albumen paper were serving the photographers with blood albumen, and possibly some of the troubles we were having might be laid to this cause. I gave the matter some little thought, and as I could find nothing published giving any light on the nature of this blood albumen, I thought it might be well to investigate a little. As a great deal of complaint had been made about the Dresden extra-brilliant paper under its various marks, I turned my attention particularly to this manufacture. I gave a sample to Dr. Piper, asking him to tell me whether it was egg or blood albumen. I also interviewed Professor Hirsch, who is engaged largely in making this blood albumen for the use of calico-makers and bookbinders, his firm buying all the blood from the slaughter-houses at our stock-yards for this purpose. Professor Hirsch examined the paper, and pronounced it blood albumen. I saw Professor Siebel, a chemist, and he said the only sure way was to get a proper analysis made, which he would undertake for the Society at the cost of time and material, probably ten dollars. Nothing was to be had in the line of information as to the chemistry of this blood albumen, or whether it was of a nature that would cause any of the troubles we were having with albumen paper. I wrote to Mr. Bode, of Milwaukee, who has done so much for us in chemical investigations, and here is what he says in regard to blood albumen: The detection of blood in albumen paper is a very difficult matter. Egg and blood albumen are chemically the same, and can only be recognized by optical analysis. This requires an apparatus for polarization. If Professor Piper declares the sample you gave him to be blood albumen, it is undoubtedly so, as he is an authority in microscopical and optical analysis. Another question is, whether the blood albumen is not as good as egg albumen for making the paper; and I think, if of the proper purity, it will be just as good. The smell is no means of recognizing the blood albumen on the paper, as egg albumen smells just as bad when spoiled through dampness. I have had considerable trouble this winter with the foreign papers, but the dissolving of the albumen could hardly come from the blood albumen, but it might be that manufacturers use something else to

cheapen the paper (blood albumen, of sufficient purity, has a high price); for instance, gelatine, which would account for the easy dissolving qualities of the albumen. The matter has been discussed at the meetings of the Berlin Association, the trouble of the softening of the albumen being laid to the low temperature of the silver solution, the atmosphere of the drying-room, and the freezing of the albumen on the paper. Herr Rolaff stated that, on good authority, he had learned that gelatine was used in the preparation."

FRENCH CORRESPONDENCE.

REMARKS ON THE PAPER BY DR. VAN MONCKHOVEN ON GELATINO-BROMIDE OF SILVER—APPOINTMENT OF A PROFESSOR FOR THE COURSE OF LECTURES ON THE INDUSTRIAL REPRODUCTION OF WORKS OF ART AT THE NATIONAL SCHOOL OF DECORATIVE ART AT PARIS.

THE time has arrived when I have to ask myself how it is possible for me to write anything at all possessing interest when there is a complete dearth of photographic news, at the same time that I have fully determined not to say a word that can be construed into a criticism of anything or anybody. There are quite enough critics, discriminating and impartial as they may be, on the staff of the PHOTOGRAPHIC NEWS, that I, too, should enrol myself among their number; besides which, it is rather their judgment to which I ought to submit myself, than that I should be considered worthy of being myself a judge of others. The line of a foreign correspondent is very clearly traced; it consists in rendering an account of all the photographic occurrences of any real interest which may happen in the country where he lives, and it is in this respect that I feel myself on this occasion a defaulter. Not that I mean to say that in this great country of France photography is for a time absolutely dead; I have no reason to suppose that; but that I myself have no information. I have tried very hard, but without success, to learn or obtain information about something new; all my colleagues are away at their country residences, at the seaside, at the baths, or on their travels.

Some Remarks on the Author of the Paper on Gelatino-Bromide read at the last Meeting of the Photographic Society of France.*—In speaking of my colleagues, I allude to those scientific photographers who work out improvements in the various methods: the absence of men of this description was marked at the last meeting of the Photographic Society of France, where, except for the co-operation of a Belgian scientist, Dr. Van Monckhoven, there would have been positively nothing of any importance communicated to or shown at the meeting. Of the new process introduced to the notice of the photographic world on this occasion by my friend, Dr. Van Monckhoven, I shall say nothing until sufficient trial and practice have verified his assertions and proved that his claim to have made another step in advance in the path of the progress of the question of gelatino-bromide has been really established. As far as the principle of the process is concerned, I feel convinced that his intervention in this question, which is a capital one for the future of photography, can only have the effect of rendering it a signal service. Of course Van Monckhoven's work will be discussed, and it is possible that his assertions may be disproved; it is quite on the cards that what he has discovered will be declared to be not new, and that the results of his researches which he claims for himself will be maintained to have been found out and published by others long ago. But though all this should happen, it will not affect the utility of his communication, the great value of which will consist in attracting to the subject the attention of many persons, even though they approach it merely to criticise his work.

Van Monckhoven is a man of too much culture—he possesses a too true and profound knowledge of science—that anything he says should be passed by without notice. Among the scientific men and chemists of the entire world who have specially given their attention to photographic questions, are there many who can be compared to him in respect to ability, who are as well acquainted as he is with the details of this important subject? I shall not venture to mention the names of those who may be placed by the side of Van Monckhoven. I have known him for more than twenty years; and, as regards a friend of so long standing, I may be permitted to have a fixed opinion; whereas, as respects others with whom I am less intimately acquainted, I might very possibly be mistaken. But of this I am perfectly certain: that Van Monckhoven is one of the most distinguished scientific men of the day; that he possesses a natural intelligence cultivated to a high degree, united with a profound acquaintance, perfected by long practice, with photographic theories and processes. It is not a panegyric of my friend that I am here attempting, but rather a kind of portrait taken from the life. I have been induced to state my opinion of him by the fact of his having communicated a paper to the Photographic Society of France—a paper which, coming as it does from so high an authority, whatever may be its character, even supposing it to be fallacious (a supposition in this case perfectly impossible) deserves to be received with eagerness, and to be examined with care, not to be dropped as unimportant or wanting in interest. One must have known Van Monckhoven for some years to be able to appreciate his inexhaustible flow of ideas on scientific topics, the great facility he has of rendering himself master of a subject, his indomitable application, both of mind and body, to the work of experiment and research. One feels inclined to ask, how is it possible to develop so much mental and physical activity, to be always investigating, discovering, and producing? But however great may be the affection that I feel for this eminent man, in speaking of him I put our old friendship for each other entirely on one side; I forget the friend, and think only of the *savant* who has so greatly distinguished himself by his investigations in our art. He belongs to us because of the high position he occupies in the photographic world. We do not now review our friend Van Monckhoven, but the author, the chemist, the physicist, whose name has been for a long time enrolled in the list of those who pursue the science of photography, whose treatises were our first text-books, whose actual work is extensive and incessant. To those who discredit him—and there are such, for there is no man of any position alive who is free from attacks, sincere though they may be; besides which, perfection is not to be found in this world—to those who discredit him, I should reply, "Forget the faults you may see in him, and think only of the real and incontestable worth of a man so tenacious of purpose and persevering unto the end as he is. Is there not on the side of merit, on the side of learning, an amount of good, sufficient to weigh down all real defects, and even all supposititious errors? Which of us would stand sifting so well as the colleague of whom we are speaking? All our good qualities would pass through the sieve, but how large would be the share of our whims and of our ignorance that would remain on it! It will be said by those who see this enlogism on our friend that it reads as if drawn upon the occasion of his death. Thank God, there is no question of that; it is because Van Monckhoven is full of life and health, as his work proves, that I devote these lines to him. Besides, I have written them as they fell from the pen without any premeditation, for in commencing this letter I was in great doubt as to the subject on which it would turn. But I have taken the opportunity offered by the paper presented by my learned friend to the Photographic Society of France to say what I think of him. In doing this, I do not believe that I have transgressed the functions of a correspondent of a photo-

* See last week's PHOTOGRAPHIC NEWS, page 374.

graphic journal, for the subject of which I am treating forms absolutely a part of photographic science. Without touching in the slightest degree what may be called a personal question in the bad sense of the term, I have been led away, but without any attempt on my part to resist the feeling which prompted me, to write a eulogium of one of our best known fellow-workers—a eulogium which I believe to be fully deserved, and which I have no desire to weaken by any criticism. For the latter I should have had some trouble to find material, for knowing Van Monekhoven as I have done so intimately and for so long a time, I am better able than others who are not so well acquainted with him to form an opinion of his work. I have followed his career with sufficiently continuous attention to be in a position to appreciate it, and I do not hesitate to say that my illustrious colleague deserves to be placed in the highest rank of those who, by their knowledge, their discoveries, and their writings have most successfully cultivated the photographic art, and have most contributed to its extension and popularity.

Appointment of a Lecturer on the Industrial Production of Works of Art at the National School of Decorative Art.—And now, in concluding this letter, let me mention a fact which tends to show that the mind of our Government is being educated in the idea of establishing a system of instruction in photography. At the ceremony of the distribution of prizes to the pupils of the National School of Decorative Art, the Assistant Secretary of State, who presided on that occasion, announced the official organization of a course of Sunday lectures on the "Industrial Reproduction of Works of Art," and that the appointment of a professor to whom the duty of lecturing would be intrusted was about to be submitted to the Minister for approval and signature. I have on previous occasions mentioned, for the benefit of my readers in the PHOTOGRAPHIC NEWS, a similar course of lectures in which photography played a considerable part. I myself was the first lecturer so appointed, and now I am again called upon to continue a course of instruction which I hope to see introduced into all our Schools of Art. The fact, at any rate, is a fresh triumph for the science of photography, and an important recognition of its incontestable value.

LEON VIDAL.

A NOTE ON GELATINO-BROMIDE.

BY HENRY COOPER.

A good deal has been said lately about the difficulties of prolonged emulsification arising from the partial decomposition of the gelatine, and also from the peculiar change which long-continued or oft-repeated heat produces upon solutions of gelatine, whereby its setting properties are much impaired. During warm weather this latter defect becomes a serious drawback when we come to the coating and drying of the plates, and it is useless to attempt to overcome it by making the emulsion more concentrated so long as the ordinary method of washing is followed. Even in the state of jelly, gelatine will go on absorbing water, and will take up such a quantity during the washing as to materially dilute the emulsion. Besides, it is not well to form the bromide of silver in too viscid a solution.

For some time past I have successfully got over both the above-mentioned difficulties by employing the following method, and, so far as I can at present see, without any drawbacks. The proportions are Mr. Bennett's:—

Twenty grains of Nelson's photographic gelatine are soaked in half an ounce of water containing two minims of pure carbolic acid, fourteen grains bromide of ammonium are added, and, after liquefaction, the solution is sensitized with twenty-two grains of nitrate of silver dissolved in half an ounce of distilled water. Cook for a week at 90°. Set, and wash in the coldest water obtainable; then add twenty grains

of the same gelatine in shreds, and raise the temperature to 90°, maintaining it until solution is effected. Then pour in one drachm of pure alcohol sixty over proof, and filter for use. If the finished emulsion is to be kept for any length of time, two minims of carbolic acid may be dissolved in the alcohol.

It will be noticed that carbolic acid is used in the first instance to prevent putrefaction during the week's emulsification, and further, that one-half only of the gelatine is submitted to this risk, the other half being added after washing, and thereby escaping the prolonged heating.

Another important point is that the finished emulsion contains only half the quantity of water ordered by Mr. Bennett, and in consequence will set much more quickly and firmly on the plates, which may be dried at a higher temperature than otherwise possible, unless they remained in a perfectly level position until dry.

The plan just described is, I believe, a good one, and of course variations in the proportion of gelatine left out may easily be made to suit different conditions of working. One point to be remembered is, to have twenty grains of gelatine to each ounce of water in the first emulsion.

Before concluding this short "note," I will briefly describe my method of coating the plates during warm weather. I obtained a large dish (mine is zinc, and measures 26 by 20 inches), and had a sheet of plate glass cut a little smaller (24 by 18). When about to prepare a batch of plates, I place the plate glass in the dish, and with four wooden wedges level it, leaving a space of about one inch under the glass. Cold water, containing crushed ice or freezing powders, is now poured into the dish until it touches the under surface of the glass. As each plate is coated it is laid upon the chilled surface of the plate glass until set, and then reared up on end in the drying cupboard just as if it were a collodion film. A flat cover, resting on the sides of the dish, prevents any light falling on the films whilst they are setting.

In coating the plate it is not warmed, as I find the emulsion will flow rapidly over it, quite up to the edges, if the plate be breathed upon. If anything is ever needed to guide the flow of the solution, I prefer a scrap of clean paper to anything else.

The thanks of all gelatine workers are due to Mr. Mawdesley for his plan of soaking the plate in chrome alum before development, as I think it will prove efficacious in almost every case, if two precautions are taken. First, the solution must be strong enough, and it must be as cold as possible. The wash waters and the developer itself will often need chilling during warm weather, if the films show much tendency to filling.

I have lately had to use as much as three grains of chrome alum to the ounce of water, and this has been done without any injurious effect upon the sensitiveness of the film.

As the temperature of my own room varies from 70 to 75°, I have just now all the miseries of warm weather without its delights, and am well able to test various methods for overcoming the difficulties of summer work with gelatine.

One word more, to call attention to a method of reducing over-intensity which has just been referred to by more than one writer. I allude to the use of a weak solution of cyanide of potassium containing iodine. For nearly a year this has been my favourite method, and I intended many times to write a note on the subject. I dissolve iodine in iodide of potassium (strength of solution immaterial), and add sufficient of a solution of cyanide to render it colourless. A little more of the cyanide is then added, and the solution diluted for use. To render intensity locally, I mix this solution with gum-water, and apply with a camel-hair brush. I need hardly say care is necessary; but with it, I have found the method safe and effective.

The compound solution does not appear to keep well for any great length of time. I prefer to keep the iodine solution ready, and add the cyanide shortly before use.

A FEW MORE WORDS ABOUT GELATINE EMULSION.

BY PHOTO-CHEMISTS.

YOUR cruel correspondent "Kaleidoscope," in giving my suggestion of using an ink-bottle for preparing emulsion a "backhander," thinks that among the events "wildly possible," even the ginger-beer bottle may be found to have its use. Poor "Kaleidoscope"! he must have been "Rip Van Winkl-ing" with a vengeance. Let him condescend to look at an elementary work on photography, and he will find something as follows, *re* the toning bath:—"It should be kept in a stone bottle, to prevent access of light, which would soon deposit the gold." I hope he is now satisfied that it will be no use for him to patent the use of ginger-beer bottles in photography.

But "*revengeons a nos*"—ink-bottles. I have again, since writing, gone through the whole process as described by me a week or two since, and am delighted with the extreme ease of it. The ink-bottle holds about seven ounces, and is furnished with a lip, which is a great advantage in pouring. Having made the emulsion, poured it into the ink bottle and tied it down, I placed it in the saucepan, and digested it for four days, or, more precisely, a hundred hours. Now, I have two suggestions for your readers. First, don't use gas; the pressure is frequently varying, and the heat often rises above that required. The night light answers admirably. I used a ten-hours' one, and placed it about two inches under the saucepan on the hob in my room. At bedtime, 11 p.m., I removed the old and put a new one, replacing this at 9 the following morning, and during the hundred hours' digesting I never found the heat vary more than three degrees from a temperature of ninety-five.

Now for my second suggestion. I very much doubt the necessity or advantage of the long emulsification. After the first twenty-four hours I coated a plate; when set, soaked it in cold water to wash it, and dried it: at fifty, eighty, and one hundred hours I repeated this. I then exposed the whole four under exact conditions as to light, time, and object, with the result of finding them alike, or, at all events, very nearly so.

Here is a heresy for you; and as backsliders rarely stop half way, I am prosecuting some experiments to prove that, delicate as gelatine plates undoubtedly are, they may be successfully worked without the very extreme precaution of filtering the light through two thicknesses of ruby glass, which deprives the operator of all control over development, and I hope shortly to give you the results at which I have arrived.

GUP.

It would take a long day's march, even among the back numbers of the PHOTOGRAPHIC NEWS, to find many collections of such interesting and instructive photographic information as was gathered together in the issue of last week.

Mr. Beatty's contribution, entitled "Some Historical Recollections of Photography," is one of no ordinary importance. There are but few living who can lay claim to two score years of photographic experience, and I trust there are none who can read Mr. Beatty's practical, straightforward narrative without peculiar interest. These personal reminiscences are worth more than any amount of clippings from the *Encyclopælia Britannica*, or *rechauffes* of Gaston Tissandier's History and Hand-book.

By the way, do photographers buy Tissandier's book as freely as they might? The elegant English edition, edited by Mr. J. Thomson, of China and Cyprus fame, and published by Low, Marston, and Co., is an ornament to any shelf. Some of the work, wood-cuts included, is a trifle

antiquated, but it contains much good matter nevertheless. The description of the early days of photography, of the labours of Daguerre, of Nicéphore, and of Isidore Nicpce, is really fascinating, both in point of interesting matter and of capital literary style.

Dr. Van Monckhoven's "new method of preparing gelatino-bromide of silver" demands concentrated attention from all. At the same time, I imagine that the manufacture of pure hydrobromic acid, and the concomitant calculations of quantity, will be a crux in the way of its universal adoption, even by the enthusiastic amateur. Dr. Van Monckhoven, however, promises the "minute details" in a future paper. If these tend to increased facility of operations, as well as to excellence and rapidity of results, "Kaleidoscope" will at once shut himself up in his dark room, and concoct gruesome messes and odours until he, too, can cry "Eureka!"

The way *not* to acquire an appetite for dinner: to take a protracted sniff at a decomposed solution of gelatine.

Captain Abney's process of making the bromide separately in gelatine emulsion does not seem to be attended with general success in other hands. I have got as far as the bromide, but, owing to repeated calls on my time, the emulsification has not yet come off. When it does, and if it succeeds, I shall hasten to record the fact, if only for self-satisfaction's sake, in having vanquished the difficulties which overthrew the veteran Dr. Van M.

I own that in spite of M. Versnaeyen's terse—and to others, perhaps, sufficiently lucid—report in last week's French Correspondence, the "Kaleidoscopic" vision has only taken in a very general idea of M. Leon Vidal's new portable camera. I quite agree with M. Vidal that in the present focussing arrangements of cameras there is room for improvement; but I think if the ground glass could be replaced by some kind of cloth, the defect of breakability would be obviated more satisfactorily than by M. Vidal's method.

I never broke a focussing screen except once in my life, and that was some little time ago, in trying a gimcrack apparatus that looked as if to break at intervals, until a final collapse "chewed up" the whole concern was its natural end and aim.

And now I must weary my readers with a subject which, for me at least, has some small interest not wholly unmixed with amusement. In reply to a mention I had made in a former number of the Photographic Artists' Co-Operative Supply Association, Captain Kerr, as Managing Director, wrote last week to correct some misstatements which he thinks I have perpetrated. As a matter of fact, the only absolute misstatement was one relating to the address of the Association. For the address of the stores and offices, I through error gave that of the manufactory.

My remark about gentlemen playing at shop-keeping was purposely set up in a separate paragraph, and was merely offered as a general and by no means personal observation. If, however, the P. A. C. S. A. prefer to take it all to themselves, I dare say the other co-operative societies will entertain no objection.

Captain Kerr's remark that the P. A. C. S. A. neither pretend nor profess to be any other than ordinary traders, except as far as regards their working on the co-operative system, strikes me as being rather clever. A Dissenter, by consequence, is the moral of a Churchman, except so far as he goes to chapel instead of to church.

Captain Kerr nobly tells the Editor that if he sees anything unfair to competing traders in the P. A. C. S. A. he may allow me to point it out in the columns of the NEWS. Permit me to assure you, Captain Kerr, that if the

P. A. C. S. A. did contain any proven element of unfairness, your permission would not be asked to point it out in manner not admitting controversy, even from your facile pen.

As for leaving the P. A. C. S. A. to pursue the even tenor of its way untrammelled by prejudice, I have far too little interest in its existence to trouble my head further about the matter. If the Association can show by consistent rectitude and uprightness that it disdains either to obtain under another name goods otherwise unlikely to fall into its hands, or to entice shareholders by a fictitious business based on sacrificial underselling of other manufacturer's specialities, it need not fear to be trammelled by the "prejudices" even of

KALEIDOSCOPE.

NEW COPYING PROCESSES.

A CORRESPONDENT of the *English Mechanic* gives the following interesting details:—

"I lately purchased a 'chromograph,' which is apparently the original form of a new copying process. It was patented and made by a company, but, within a few days, I came across no less than four other close imitations, which were being freely sold under various names. I inquired about the validity of the patent, and could not get any very decided information. After a few minutes' search at the Patent Museum, I found a patent by J. G. Wilson, 13th November, 1878, No. 4601, which seemed to embody, at all events, the principle of this new process; but partly because imitations were being freely sold, and because the specification made no mention of several points about the article which are decided improvements, I felt no scruples in copying the receipt, from which some dozen or more have been made (for private use) by my friends.

"Take one part by weight of gelatine (glue does just as well), let it swell in two parts of water, melt, and add four parts of (common) glycerine with a few drops of carbolic acid, and sufficient whiting or white-lead to make the whole milky. Pour the mixture into a shallow tin or zinc dish; it will be ready for use in about twelve hours.

"I have not been successful with the ink prescribed in the specification: 1 violet methylated aniline (Hoffman's purple?), 7 distilled water, and 1 alcohol, so I have bought it at the most extravagant price of 1s. per ½-ounce bottle; but acetic rosaniline, boiled down in alcohol till it does not run in writing, forms a capital red ink. The purple ink is dosed with oil of almonds, I suppose, to mask its real composition.

To use the process, write on any kind of paper with the ink, taking care that the writing is thick enough to show a green lustre on drying. When dry, place it, face downwards, on the jelly, rub it gently to bring it well in contact, and leave for one or two minutes; then peel it off. It will leave a large portion of the ink neatly transferred to the jelly; then place the paper to be printed on the writing, and pass the hand over; bring it well into contact as before, peel it off, and it will bring away a perfect copy of the original. In this way sixty to eighty copies may be made; by using a thick pen and plenty of ink, one hundred good prints may be taken. If the original still shows a green lustre, another transfer may be made. When exhausted, wash off the ink from the jelly with a sponge and cold water; the ink need not be entirely removed, since it does no harm if too faint to print and the composition is worn away by washing; a layer a quarter inch thick would give five thousand copies at least, if not twice that number. If the jelly is injured, it may easily be melted down over a spirit lamp, or in an oven. After melting, and in the first instance after making, the surface should be washed with cold water.

I consider this to be one of the most important inventions made for some time, and it is a great pity that the inventor, a Bavarian gentleman, did not more carefully protect it, though it is very foolish to sell an article for 12s. 6d. when it can be made by anybody with the greatest ease for 2s. 6d.

"The use of the whiting or white-lead is to show up the writing on the composition, and to enable the washing off to be observed more easily. Neither this nor the carbolic acid are mentioned in the specification; but since so many slightly differing articles are being sold, I believe anybody is at liberty to make one. 12 inch by 10 inch is a convenient size. A pair of tablets this size is sold for 20s!"

Correspondence.

THE FERRO-CYANIDE DEVELOPER.

SIR,—The most recent contribution to our knowledge of dry plate working is Mr. Henderson's ferro-cyanide developer, and I think I may safely say, after giving it a very extended trial, that it entirely changes the whole aspect of affairs—there is a simplicity and certainty about it that enable almost any one to work it. Thus much might have been said for the ferrous-oxalate developer, but it was accompanied by such continual organic changes that considerable experience was required to follow them, and a tedious length of time occupied; but with the ferro-cyanide, a rapid, powerful, brilliant development, free from fog, is obtained.

Permit me, in a few words, to give what, in our own studio practice, is found to be very successful:—

Sat. sol. fer. cyan. pot. ...	2 ounces
Water (ordinary) ...	2 "
Pyro ...	8 grains

When about to use, add two drops ammonia for each ounce—the dark colour assumed by the liquid is unimportant—wet the plate under a tap first, and then immerse; full intensity, with abundant half-tone, is readily acquired. In such a quantity as given above (four ounces) several quarter-plates may be developed.

It must not be forgotten that a pinch of pyro and a drop or two of ammonia are wanted for each fresh plate. There is no doubt that this developer enables one to shorten the exposure, I think, about one-third.

It must not be overlooked that development should be continued till the draperies are nearly buried, otherwise the intensity will be insufficient. It is a great advantage of this developer that the negatives resemble wet collodion ones in every respect. If, from over-exposure, difficulty is found in getting intensity, an addition of pyro will give it; for more half-tone, or to bring out draperies, more ammonia is wanted.

The best way to mix pyro is to dissolve an ounce of it in two ounces spirit by pouring the spirit into the pyro bottle—six drops may be called a grain. It should be used from a pneumatic dropping bottle.—I am, respectfully,

SAMUEL FRY.

Proceedings of Societies.

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

THE Board of Management held their monthly meeting on Wednesday, August 6th.

The minutes of the previous meeting having been read and confirmed, Mr. Bradforde (of Bath) was proposed and duly elected an ordinary member of the Association.

The offer of "Kaleidoscope" to subscribe ten shillings to a PHOTOGRAPHIC NEWS Fund for the Photographers' Benevolent

Association, with the proviso that nineteen others would do likewise (see NEWS of July 25th) called for and received the thanks of the Board. It is to be hoped that the necessary number of members will be found to support the proposer.

After some further discussion on the business of the Association, the meeting adjourned till September 3rd.

Talk in the Studio.

CORNWELL POLYTECHNIC SOCIETY.—The Annual Exhibition of the Royal Cornwall Polytechnic Exhibition will open on Tuesday, the 2nd of September. We hope that the photographic department—generally very interesting—will be as good as usual. Mr. William Brooks, of Reigate, will take part in its arrangements, and will, we have reason to believe, act as one of the judges.

DECOMPOSITION OF CHLORINE.—We recently stated that from experiments made by Mr. Norman Loekyer, there was reason to doubt that the elements were simple homogeneous bodies. Some recent experiments by Professor Meyer, of Munich, point to the conjecture that chlorine is a compound body, of which oxygen is a component part.

ALLEGED ROBBERY BY A PHOTOGRAPHER.—John Charles Lingard, 24, described as a labourer, James Harford, 31, a photographer, and Thomas Small, 30, a dealer, were indicted for stealing a watch, the property of James Earley, from his person. For the defence it was urged that it was a case of mistaken identity, and witnesses were called in order to prove an *alibi*. The jury, however, in the result, convicted the prisoners. Former convictions were proved against Harford and Lingard, who were sentenced to seven years' penal servitude, and Small was sent to prison for twelve months.

EFFECTS OF COLOURED LIGHT.—A French *savant*, M. Baudrimont, has noticed an unmistakable, but at present obscure, connection between the amount of evaporation from a given surface, and the colour of the light by which it is illumined. Evaporation is very small under a red or a green light; it is greatest in a yellow, or in ordinary white light. This fact is, doubtless, connected with the action of certain colours on vegetation and animal development. That the different colours of the spectrum have an influence on vegetation has long been known. Plants grown under green glass soon die; under red glass they live a long time, but become pale and slender. Mr. Yung, of the University of Geneva, has placed the eggs of frogs and fishes in similar conditions, and found that violet light quickens their development, and blue, yellow, and white also, but in a lesser degree. Tadpoles, on the contrary, die sooner in coloured light than in white light.

PHOTOGRAPHIC ILLUSTRATIONS OF SKIN DISEASES.—In noticing the first part of an atlas bearing the foregoing title, *New Remedies* says:—"The method of illustration adopted resembles that of the Albert-type, in which a photographic negative is made of a nature which adapts it to be used to print from, and the difficulty which has heretofore been met with in colouring a photographic surface is avoided. In the present instance the colouration is little more than the faintest possible wash, the prominent shadows or features of the picture being retouched with India ink and colours. Attempts have already been made to make use of photography for the delineation of skin diseases without an approach to the success which has been achieved in the present instance."

CHEMICAL COMBINATIONS.—*Appleton's Journal* contains a calculation by Berthelot, the eminent chemist, of the number of combinations which may be made of acids with certain alcohols. He says: "If you give each compound a name, and then print 100 lines on a page, and make volumes of 1,000 pages, and place a million volumes in a library, you will want 14,000 libraries to complete your catalogue."

NON-EXPLOSIVE PYROXYLINE.—Herr Schering, of Berlin, has patented, under the name of "celloidin," an unexplosive substitute for gun-cotton for making collodion. He claims that, while making an excellent preparation, it being entirely soluble in the mixture of ether and alcohol, it has the advantages over gun-cotton of neither being capable of igniting spontaneously, nor exploding when rubbed or pounded, thus being entirely safe for transportation. Its only objectionable feature is the length

of time required for solution, which, especially when very dry, far exceeds that necessary for dissolving gun-cotton. It is probably made by partial evaporation of collodion.

To Correspondents.

DRY PLATE.—If you follow instructions exactly and fail to get good results, it is impossible for us to point out the cause for such failure. The thinness of image is generally the result of over-exposure, and fog is generally produced either by the presence of light in the dark room, or injudicious use of ammonia. So far as we know, the plates you are using are the best. We do not hear such good accounts of those you enquire about at the close of your letter.

E.—You will be able to obtain the specification you require at the Patent Office, in Southampton Buildings. You must examine in the index of names for the name of Edwards, as the patentee. We do not remember the special claim of the patent, but, so far as we remember, detaching the film containing the printing surface was one important point. 2. Probably to give pliancy, and prevent a dry, brittle condition. 3. Chromo alum and tannin produce insolubility independent of the action of light.

LUNA.—The best way, we think, to obtain a thick coating of gelatine on paper will be to apply successive coats, allowing each to dry before applying another.

C. M. D.—In order to get your photographs published, you should communicate with a photographic publisher, showing examples of the work. If the pictures are attractive and likely to please the public, you will have no difficulty. The question as to who shall print them, &c., will depend upon arrangement. Probably the largest and most successful photographic publishers are Marion and Co., of 23, Soho Square. The Stereoscopic Company, of Cheapside, also undertake such publication.

A TEN YEARS' SUBSCRIBER.—Lead is an expensive material, but is generally found to be durable. Probably slate, carefully cemented, is the best material you can use. We cannot refer you to any article on the construction and arrangement of dark-rooms. Probably we shall have something to say on the subject next week. As a rule, they have to be made just as circumstances and convenience permit.

IN A FOG.—Captain Ahney described his method of eliminating fog in emulsion plates in a paper read before the Photographic Society, which was afterwards printed in our pages. The readiest reference is to his work on *Emulsions*, in which he says:—"There is also a method of eliminating fog from the dry plate when it is coated without doctoring the emulsion at all. This need not only apply to washed emulsions, but can be effected during the washing of the plates prepared by the unwashed emulsion. In addition to the elimination by the acids, &c., we can further effect it by using a solution of potassium bichromate, permanganate of potash, or peroxide of hydrogen." And further on he says:—"Plates which fog through having been exposed to light may be rendered ready for exposure by washing off any preservative they may have on them, and immersing them in a hock-coloured solution of potassium bichromate. After washing, a preservative may again be applied."

JUNIOR.—Shellac can be dissolved in alcohol by the aid of gentle heat. Methylated spirit will do perfectly as well. It will probably appear turbid at first, but if left to stand a few days an opaque deposit will settle, and the clear portion should be carefully decanted off.

QUERIST.—You will find Mr. Jarman's articles in the three issues of the PHOTOGRAPHIC NEWS preceding the present, July 11th, 18th, and 25th.

M. R. D.—Plain unbleached calico is a good and cheap material for a background screen, if you can yourself apply a coating of distemper colour. Woollen cloth is sold for the purpose, and answers well.

Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

- Mr. J. D. HANNAH, Shrewsbury,
Photograph of the Shrewsbury Fire Brigade.
- Mr. R. SYMONS, Tenby,
Photograph of Tenby Church Spire, with Mirage of a Gunboat.
- Mr. S. W. BARNES, Ashford, Kent,
Photograph of Collection of False Teeth.
- Mr. W. McLEAN, Hunstanton,
Photograph of Mrs. Melton.
- Mr. S. J. POOLT, Putney,
Photograph of H.R.H. Prince of Wales Laying the First Stone of New Wing of Royal Hospital for Incurables.

The Photographic News, August 22, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO. MEYER'S IMPORTANT DISCOVERY, AND A POSSIBLE EXPLANATION OF THE FORMATION OF THE LATENT IMAGE—GINX'S BABY.

Meyer's Important Discovery, and a Possible Explanation of the Formation of the Latent Image.—Our readers may remember that some months ago Mr. Norman Lockyer, F.R.S., published some interesting speculations (to call them nothing more) on the disassociation of the elements. He started the theory that many of the bodies which we now look upon as elements are not elements at all. This theory was in a measure corroborated by a vast number of spectrum pictures which he had secured by the aid of photography. Mr. Lockyer's view, broadly stated, was this: that if you heated certain so-called elements to a very high degree, they gave evidence of being of a simpler nature than they were before. If you looked at an element through the prism of a spectroscope, and regarded the lines in the bands of colour, you would find that these lines, numerous at first, would become less, if a very high degree of heat were made use of. The lines not only become less, but they grow larger and brighter. Hence Mr. Lockyer considered that heat had reduced the body to a more simple form. The spectra of our brightest, and, therefore, hottest stars, contained fewer lines than the less brilliant ones, as Mr. Lockyer was able to show by his photographs of those heavenly bodies. Hence he concluded that, instead of our being in possession of many elements, there are but very few which deserve the name, hydrogen, no doubt, being one of them. This view of Mr. Lockyer's has lately assumed increased importance from the fact that a Swiss chemist is now in a position to prove that chlorine is no element; nay, more, that another friend of the photographer, iodine, is an impostor also, and has no right to the appellation it has so long usurped. We need not say that bromine—to the discovery of which we are indebted to the last president of the French Photographic Society, M. Balard—may, under these circumstances, be expected to fall also. The discovery that chlorine is no element must rank as one of the grandest of the age, certainly with Pictet's assurance that oxygen and its kindred could be liquefied. To photographers the matter will be of exceeding importance, and, as we shall presently show, it may lead to an explanation of the creation of the latent image. The discovery is due to Victor Meyer—or, perhaps, we should rather say, to MM. Victor Meyer and Carl Meyer, for these gentlemen have been conducting their experiments hand in hand. They desired to test the vapour density of chlorine at certain high temperatures, and hence they subjected it to degrees of heat varying from 620° to 1567°. At a temperature of 808° an evident splitting up of disassociation of the so-called element was apparent, and this disassociation remained constant at temperatures above. The density of the heated vapour was exactly two-thirds of what it had previously been, proving beyond a doubt that no longer chlorine, in the condition we know it, was there. M. Victor Meyer at once proceeded to examine the heated vapour further, and then found that traces of oxygen were given off. Thus we have the fact that by heating chlorine oxygen is evolved, and we may mention to our readers, what has not yet been made known in public, that at a recent investigation conducted by M. Meyer, a quantity no less than a litre of oxygen was secured by the heating of chlorine. There can, therefore, no longer be any doubt about the fact. Chlorine is no element, but, as M. Meyer chooses to call it, $M + O$, or murium and oxygen. Berzelius had the theory that chlorine was an oxygen-containing substance, and he it was who suggested the murium theory; but it has remained to M. Meyer to establish the fact. Iodine, M. Meyer tells us, behaves, so far as change of density goes, in a way similar to chlorine; but

they have not yet proceeded to extract oxygen from it, although there is little doubt that they will succeed. Bromine must necessarily follow, and then, perhaps, the explanation of the latent image, whether formed in the presence of bromide or iodide of silver, will not come so difficult. If light can act in the same way as heat, and liberate oxygen from bromine and iodine, in a photographic film the oxygen combining with the metal naturally brings about incipient reduction, and hence we get an explanation of the formation of the image. That the image was due to the conversion of a portion of the iodide into sub-iodide has long been a theory with chemists at the head of whom is Mr. Spiller, and we should think, therefore, that he would support the theory we have just expressed. If we can prove that free oxygen comes from the iodide as it does from iodine, during the sojourn of the photographic plate in the camera, the formation of the image would certainly be no longer such a mystery as it is. But in any case, M. Victor Meyer's discovery is a great one, and, as we said before, it curiously supports Mr. Lockyer's expressed opinion that many bodies we now hold to be elements are not elements at all. In the same way, it will give confidence to young chemists in proving to them that the field of research is by no means so exhausted as they have supposed. Instead of having found out everything worth finding in chemistry, we are apparently but on the threshold of that world of science. Not only have we still much to learn, but a great deal to unlearn into the bargain. There are several other elements that will be attacked, now that a whole group have been compelled to surrender, and we shall be mistaken if the step made by the brothers Meyer is not at once followed by other doughty chemists.

Ginx's Baby.—What has become of Rejlander's negatives? we were asked the other day. Now that carbon enlargements can be executed upon the most magnificent proportions, and we thus secure pictures that are suitable both by reason of their permanence and size for dining room or library, the character sketches by Rejlander should be capable of profitable reproduction. We wonder the Autotype Company or some other similar establishment has not given attention to such a series of pictures. "Is it True," "Did she," "At the Play," "Box of Lights, Sir," and the other characteristic plates, must be in existence somewhere, and they have only to be put before the public in a suitable form to command purchasers. No doubt, putting before the public is one of those things easy enough to talk about, but difficult of execution, and there cannot be a doubt that unless it is at the Annual Exhibition at Pall Mall, the outside public have little means of knowing what photographers can do and are doing. We see that the last appearance of "Ginx's Baby," Rejlander's famous picture, is on the outside of a sheet of music. There is a Ginx's baby galop or polka, or something of the sort, and on the frontispiece is a copy of the well-known photograph. The last time we saw a piracy of the picture was at the Paris International Exhibition last year. Wandering through the Belgian courts we saw the familiar features of Ginx's Baby grinning at us through a glass case. There were big babies and little babies burnt in upon porcelain, but they were all of one common stock. Rejlander, by the way, when he first sent his picture to the Pall Mall Gallery, labelled it "Mental Distress," and it was the honorary secretary of the Society who christened it Ginx's Baby in the catalogue. Rejlander did not half like the new name, and wrote demanding that it should be changed. The amendment was promised in the next edition of the catalogue, but the change was never made, and the new name stuck to the picture evermore. It was the most successful of all Rejlander's productions, and its sale throughout the kingdom reached tens of thousands; it was, indeed, the only one from which Rejlander reaped a substantial benefit, and its fame has not yet deserted Ginx's Baby, seemingly.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

STUDY OF ANATOMY FOR PHOTOGRAPHERS—WHAT IS STYLE—ON THE VALUE OF STRONG PRINTING BATH—PHOTOGRAPHING OIL PAINTINGS—RECENT INVESTIGATIONS OF GUN-COTTON—GELATINE PLATES FOR THE PRINTING PROCESS—ELECTRIC LIGHT ENGINES—AGITATION AGAINST PHOTOGRAPHY—LÖESCHER AND PETSCH'S NEW STUDIES FROM LIFE.

IF, twelve years ago, it would have been intimated to any photographer that the study of anatomy was not out of his sphere, he would simply have ridiculed the matter, although at that time anatomy had already its place on the line of studies in every academy of art; and the young painters had to study bones and muscles, not alone from models and pictures, but also from living bodies, and in the dissecting room, in which they had to take a practical part. And now Mr. Hartman, the well-known partner of the firm of Löescher and Petsch, who, nine years ago, published the highly interesting article on the aim and scope of the retoucher, finds his lectures on the anatomy of the head not only not ridiculed, but listened to with infinite interest. Everybody who was present at his lecture was convinced that only a thorough knowledge of the bones and muscles of the head enables the retoucher to avoid those ridiculous mistakes which Mr. Hartmann points out in a very interesting example. Some knowledge of the anatomy of the head is therefore obviously of very great advantage to the thinking photographer, and I would like to suggest to reproduce the picture of the human head, with remarks, a part of which I gave in my last, by Mr. Hartmann, on page 39, in the May number of the *Photographische Mittheilungen*.

In my letter which was published in the May number, I wrote about the strong printing bath which Mr. Brandt recently recommended to use, in order to avoid some defects caused by weak baths; but some experiments lately made here did not sustain Mr. Brandt's assertions in all cases. The fact is that our paper is now salted much less than formerly, when up to three per cent. of salt was used, while now only one per cent. is considered sufficient, which makes it that a much less quantity of silver salts is required to form the chloride into chloride of silver. For this reason alone no such strong baths are necessary any more, as were formerly in order; but it appears also that some papers resist strong baths (eighty grains per ounce), a defect which can only be remedied by adding three per cent. of alcohol. Furthermore, it seems that blisters and bladders make their appearance with a strong bath just as often as with a weak one. On the other side, a strong bath can be used up to the last drop, while a weak bath is soon used up, so that it produces only very weak copies: and only through fuming with ammonia this defect can be met.

I read lately, in one of our English contemporaries, the statement that the reproductions of oil paintings are on the Continent much better than in England, and in explanation of this occurrence the assertion was made that the most and the best copies from oil paintings on the Continent are not made from the original pictures, but from copies of one colour, specially prepared for the purpose, and that not so many of such copies are made in England as abroad.

Now this assertion is erroneous. The two main establishments for photograph reproduction from modern oil paintings are, I believe, Goupil, at Paris, and the so-called "Photographische Gesellschaft," at Berlin; and both establishments photograph directly from the original paintings. Formerly, to be sure, sometimes copies were made in black chalk from the old oil paintings, and the photographs taken therefrom. Such was the practice, for example, in the celebrated gallery at Dresden.

But since the "Photographische Gesellschaft" has been granted the privilege to photograph oil paintings directly from the originals, this practice has been out of use, and I know of only one instance, that recently a one-coloured copy was made from an original painting for photographic use, and this was with Makart's "Catharina Cornaro." All other reproductions of oil paintings which were issued at Berlin were made directly from the originals, and they owe their excellence to the skill of the operators, who are schooled in this branch, and to the judicious negative retouching.

Some time ago I reported to you the experiments on photographic pyroxyline by Dr. Wolfram, and recently the well-known photographic chemist, Dr. Eder, has published an essay on the composition of pyroxyline, which disputes some of the grounds taken by Dr. Wolfram. In the first place, Dr. Eder declares the different kinds of pyroxyline to be *nitrate*, not substituted *nitro* compounds, so that pyroxyline contains nitric acid, instead of the nitrous acid (NO_2), in which assertion Dr. Eder diverges from all former views. He enumerates five different kinds of pyroxyline, of which the highest is cellulose hexanitrate ($\text{C}_{12}\text{H}_{11}\text{O}_4(\text{NO}_3)_6$). It is insoluble in alcohol. All the others (cellulose pentanitrate to cellulose dinitrate), however, are soluble in alcohol ether, and become colloidal.

Recently Mr. Wilde placed a singular kind of gelatine dry plate in the market, which differs from the other plates in that it is destined for the positive, and not for the negative process. They are lighted in the printing-frame till the picture has appeared perfectly distinct and strong, and the picture is then simply fixed and washed, and represents then an excellent positive, free from structure and grain, which so often disturbs in carbon diapositives. Such positives are very suitable for enlargements, as from them enlarged negatives are made in the camera with the collodion process.

The electric light apparatus engrosses the attention here more and more of late, so that they are already manufactured in wholesale for laboratories, galvano-plastic, and photography. A Mr. Metzger, in Alt Breisach, now furnishes an apparatus which can be attended to by a couple of men, and producing an effect of light corresponding to three hundred candles (a common gas-burner of a gas-lamp in the streets has a strength of about four candles), for \$150. The whole machine weighs one hundred pounds.

The other day they held in Pomerania a monster pastoral camp meeting, in which the worthies indulged, as usual, in fiery and ungrammatical tirades against everything and everybody, apart from the chosen few; but an unsophisticated tiller of the soil clapped on the climax, and became at once the cynosure of a thousand admiring eyes when he thundered forth the immortal words, "The social misery, and the wicked doings of the bad Socialists are solely due to the throwing of flowers in corso-processions, the drinking of beer, and the desire of people for having their portraits taken." It has been proposed to elect this honest gentleman to be the patron of photography, and to vote him a beer-glass, a bouquet, and a head-rest as emblems of his high office.

In spite of this Quixotic crusade against photography, there appeared, of late, some excellent productions which caused deserved admiration in the public and in experts; I mean the pictures by Löescher and Petsch, destined for the exhibition at Sydney. In contrast to the hitherto current practice to choose backgrounds of a very subdued hue, and reserving the main light for the person, Messrs. Löescher and Petsch have taken quite bright, almost light backgrounds, from which the figure stands out dark. To be sure, the effect of some faces will be like a negro's, which would not suit exactly an American, but this happens only in exceptional cases. Löescher and Petsch put a window decoration on such a white background, and placed

* The Philadelphia Photographer.

a lady in front of it, who is fairly drowned in the strong light coming from the back, without appearing dark in the least. The pictures appear altogether as if they were no photographs from life, but copies from oil paintings. An extremely bold idea it was, too, to photograph a group not in the atelier, but in the open country, right in the sunshine. It is a young lady, sitting before a wall, in the full glare of the sun, who makes funny gestures with her fingers, throwing the shades upon the wall, where they are watched with evident enjoyment by a nice little boy in a suit of black velvet. The whole idea is extremely hold, but the effects are a capital success.

As Mr. Hartmann said to me, the secret in these kinds of pictures lies in hitting the exact time of exposure; half-a-second already causes total over-exposure. It would certainly be a daring undertaking to take portraits in this way; but such pictures are best capable of showing to the public at large to what a degree of perfection photography, as an art, may aspire.

ARTISTIC RETOUCHING.

BY O. W. OSBORN.*

NEGATIVE retouching has become so firmly united with the regular photographic practice, and the superior results obtained by its use (when properly done) have won for it such a multitude of votaries, that it is almost useless for anyone to utter a word or raise a feeble voice against its use (or abuse) as practised at the present day.

To be a good retoucher, one must know something; in fact, he must know a great deal, for the proper retouching of a negative cannot be accomplished by a mere dolt or dunce whose sole aim and object is the acquisition of dollars and cents. When a man is prompted by mere mercenary motives to enter into the ranks of the great army of retouchers, and seizes a pencil and hangs away at a negative until the sound of the pencil point coming in contact with the varnished plate can be heard in all parts of the room, and after the expenditure of five minutes' artistic (?) skill, he passes the plate to the printer with the satisfied air of one who knows what he is doing, you may set that booby down as an artistic idiot of the first water. He has no business in the profession, and should be spurned by all true lovers of the art photographic. It is far better to leave a negative just as it was when fixed and varnished, rather than entrust to an incompetent person to remedy the defects.

I do not wish to be understood as opposed to genuine artistic retouching when it is confined within certain limits; on the contrary, I honestly believe there never was anything discovered which has contributed so much to the production of artistic pictures as the art of negative retouching. I speak of it as an art, for the reason that the same rules and principles of *chiaroscuro* are as equally applicable to negative retouching as to painting or engraving.

Proprietors themselves are very often to blame for the mass of poor work that is commonly turned out in the smaller cities and towns over the country. Even in the larger cities there is a great deal of retouched (?) work sent out from some of the lesser galleries that is simply a disgrace to the gallery wherein the work was done. If proprietors could be induced to believe that it is far better, in every respect, for them to employ only first-class workmen in all branches of the photographic business, they would learn in a very short time that the public would appreciate their efforts to give them good work, and consequently would be willing to pay accordingly.

But one thing must be borne in mind, and that is, that fine retouched card Rembrandts cannot be made at one dollar and fifty cents per dozen. A reasonable price must be charged, or else the quality of the work must suffer; for no man can afford to hire help, and pay fair wages for the same, without first establishing a list of prices which will allow him a liberal margin, and insisting upon at least a partial payment at the time of making the sitting.

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Almost everyone who retouches negatives has his own particular method of working, and in proportion as that method is good or bad, so will the quality of the work produced by it be good or bad. Some raise great objections to the rather old method of grinding the varnished surface with cuttle-fish, and not without some good reasons. If the material used for removing the glossy surface of the varnish be of too coarse a nature, or the varnish itself is too weak, thereby giving a very tender film, it is probable some very serious damages would result from grinding the surface; but if the material is fine and the varnish of good body, I can see no reason why any damage should ensue from its use. Powdered pumice stone is used by many and pronounced very good. A pinch of bicarbonate of soda dropped upon a varnished surface and rubbed in a circular motion with the ball of the finger will generally remove the gloss, if the negative has not been varnished too long, and leaves a magnificent surface upon which any amount of work may be done. If only the face is to be worked, it is better to grind the negative; but if much work is required all over the face, hair, and drapery, I would recommend that the negative be varnished with some good varnish, and, after it is dry, to again flow the plate with Hance's ground glass substitute. A lead pencil takes finely upon such a surface, and after all the work necessary has been performed, the retouching may be covered by another coating of the regular varnish. This second coating is a great advantage, inasmuch as it separates the retouching from the paper, thus considerably softening the work, producing a sort of mezzotint effect which adds considerably to the beauty of the finished print.

The best method I have ever found to remove spots, freckles, pin-holes, &c., is to take a medium hard pencil and sharpen it with a knife and a piece of sand-paper, making it very sharp, and with this touch out all imperfections. If an attempt is made to remove pin-holes and freckles with India ink, the chances are about ten to one in favour of your producing a first-class failure; for when a transparent spot is touched with ink, you will observe in the proof a little round white ring with a black centre.

In all my experience—and it has extended over a dozen or more years—I have used a great many new retouching pencils, but I find, after all, Faber's graded pencils are the best it has ever been my fortune to use.

In commencing work, begin by softening some of the deepest wrinkles, without, however, entirely removing the same, and touching out some of the largest freckles. Remove the greater blemishes first, which will cause the plate to present a smoother appearance by transmitted light, and give you a chance to judge of the general effect. The province of the retoucher should be to remove the defects and exaggerations, and, I may say, falsifications, to which the camera is prone. But some are bent on producing the beautiful stippled effects so often seen in the work done in the finest metropolitan studios, without stopping to think that such work is done by real first-class workmen who, perhaps, have had many years' experience in the finest galleries in the country. Perhaps their efforts were crude at first, but by constant practice and untiring efforts they have acquired that skill and dexterity of touch which characterizes the master workman, and distinguishes him from those who have drifted into the retoucher's chair simply because they have failed in everything else. How mortifying it sometimes is to a good operator, who, having made a fine negative and given it to the retoucher, gazes with astonishment upon the proof, and wonders whether retouching is or is not a fine art. Instead of the retoucher confining himself to the removal of those little imperfections which are always met with in some shape or other, he attempts to produce something grand (just because the operator did a good job) and has worked and negged the life and character all out of what was, in the beginning, a really first-rate negative, until there is nothing left for the operator to do but make another negative and have the retoucher improve (?) it in the same manner as he did the first one. How often do we find pictures which, although exhibiting marks of

superior excellence, are at the same time so worked to death in the face, that what was once a finely modelled and artistically lighted picture, is now nothing but a miserable apology—with all the delicate shadows removed, and the face as flat as a board.

First make a fine negative, and then remedy the defects by retouching. While a little judicious work on a good negative will sometimes greatly improve it, yet no amount of retouching will improve a really bad or under-toned negative. As a skilled designer would never dream of passing his drawing over to a botch engraver, to be spoiled and caricatured, neither should the operator, who values his reputation as an artist, ever entrust his work to be finished by one of those modern Raphaels (!) who know no more of the true principles of art than a cannibal does of the kingdom of heaven.

For many years I have practised a little dodge which saves a good deal of work, and produces results which are very nice; in fact many consider such results as embodying a little more than ordinary merit. It is this: coat a negative on the glass side with a mixture composed of equal parts of good negative varnish and Hance's ground glass substitute, and after it is dry, which will be in from five to fifteen minutes, take a soft lead pencil and strengthen the high lights, if found necessary, by rubbing a small spot on the varnish where the strongest light should be; make this spot very intense, but do not make it much larger than a pin's head for a card negative. A line may be drawn down over the nose, but this had better not be attempted unless great care is exercised, as a little movement one way or the other will be productive of bad results. Large masses of shadow on the face can be considerably softened by this method, and made to print as much lighter as may be thought necessary. In fact, when a weak, flat copy is treated in this manner, and the negative is held square with the sun during printing, it will make the eyes of the uninitiated stand open like the cellar doors of a country town, to behold the difference between the prints. Retouching on the glass side of a negative is an old dodge, and, I may say, one of the best I ever saw; for, even if the work is put on a little coarse, the separation from the paper during printing will give to the high lights so treated a peculiar softness and beauty which are not to be despised. Negatives from life which are too weak to yield a brilliant print can be treated after the same manner above indicated, and made to yield prints which have a peculiar character of their own, and, if well done, will entitle such work to rank first in the grade of merit.

The retouching frame is too well known to require aid notice here. Suffice it to say that I have found a sheet of white paper or cardboard to be an improvement over the mirror commonly in use, inasmuch as it is pleasanter to the eye, and does not produce that disagreeable glare which is sure to result when a mirror is used.

It must be remembered that there is something more required to make a good retoucher than the simple pencil and magnifying glass. If such was not the case, then one retoucher would be as good as another, provided his tools were as good. But, unfortunately for many, the retoucher must, or at least should, be able to commence where the operator left off, and continue the work by means of the pencil which it was almost impossible to do with the camera or chemicals. He should be able to grasp the photographer's idea and carry it forward to its successful completion. Unless the workman can do this in a greater or less degree, he had better abandon the business to some one else, as a poor retoucher is a shade worse than none.

Every man who understands the first elementary principle of art, knows that if we have a brilliant light in a picture, it is absolutely necessary to support that high light with a mass of shadow, in order to preserve harmony and give character and breadth of effect.

The more artistic ability a retoucher possesses, the more perfect will be his productions, and *vice versa*, for I maintain that the same rules and principles of light and shade govern

the one as much as the other, and unless a person has some talent in that direction, he or she had better surrender the business, and pursue some avocation for which they possess more and better qualifications.

PURIFYING AND SOFTENING WATER.

A PROCESS for completely removing the hardness of water, and rendering it equal to distilled water in softness, has been recently patented by Mr. A. Ashby, of Grantham. The process is especially useful for manufacturing and industrial purposes, but may also be employed for removing the whole or part of the hardness from water used for drinking or domestic purposes. After the temporary hardness, which is due to the presence of bicarbonates of lime and magnesia, and salts of iron, has been removed from the water by the addition of lime or lime water (Clark's process), by boiling, or by any other known method, the patentee adds, for the purpose of removing the permanent hardness which is due to the presence of soluble salts of lime, magnesia, and iron, other than those which cause the temporary hardness, a sufficient quantity of a solution of carbonate or bicarbonate of soda or potash, or of any other soluble carbonate or bicarbonate which will decompose and effect the precipitation in an insoluble form of the substances which produce the permanent hardness, either with or without the aid of heat, which may be applied either by means of a fire, or by passing steam through coils of pipes placed in the water to be softened, or by blowing steam directly into the latter. The waste or exhaust steam from a steam-engine may be employed as an economical source of heat. Or he removes the magnesia, which may wholly or partially cause the permanent hardness, by the addition of an excess of lime during the removal of the temporary hardness, whereby the water is rendered alkaline, and the magnesia is precipitated in an insoluble form, the excess of lime being subsequently removed by the addition of a sufficient quantity of carbonate, or bicarbonate of soda, or potash, or of any other soluble carbonate or bicarbonate, and when necessary by the addition of some free carbonic acid gas after the addition of the soluble carbonate, whereby any caustic alkali which may have been formed is converted into a carbonate. The patentee prefers to have a separate mixing tank, in which the solution of carbonate or bicarbonate may be added after the lime water has been previously added to the hard water in another mixing tank, and to have the second mixing tank of larger dimensions than the first. Where there is steam or other power, stirring gear should be placed in each tank.

In the process described the free and half-combined carbonic acid gas is first removed, so that the subsequent removal of the permanent hardness is rendered both practicable and easy. The process may be used in conjunction with Clark's process, but it is preferred to use it in conjunction with the Porter-Clark process, which removes the temporary hardness from water. The patentee says that after water has been treated by this process, it is devoid of all hardness, so that it is equal to distilled water for washing and manufacturing purposes. When determining the proper proportion of soluble carbonate or bicarbonate to be used, proceed as follows:—After a sufficient quantity of lime or lime water has been added to combine with the free and half-combined carbonic acid, or, if required, sufficient also to remove magnesia in an insoluble form, take (say) a quarter or half-litre of the water, and drop into it from a graduated glass measure (e.g., a burette divided into cubic centimetres and parts of cubic centimetres) some solution of soluble carbonate or bicarbonate of one per cent. strength, or of any other strength that may be found to be most convenient, and preferably some of the same solution that is going to be used in the process of softening, and then raise the water to as nearly as can be the same temperature as that to which it will be subjected during the process. In order to ascertain when just a sufficient quantity of the solution has been added, the patentee uses turmeric or reddened litmus paper, so as to avoid having an alkaline reaction in the water, or he adds a little solution

of calcic chloride to some of the water after it has been filtered into a glass vessel, when no turbidity ought to be produced in the water; or some of the filtered water is added to a few drops of a solution of mercurous nitrate or of mercuric nitrate placed in a white basin, when no change of colour ought to take place; or any other convenient chemical reaction may be employed as an indicator. If a slight degree of alkalinity in the softened water is of no consequence, so much care need not be bestowed on this point. Should it be desired to remove only a portion of the permanent hardness, a smaller quantity of the solution of carbonate than is indicated above may be added, and the resulting hardness of the partially softened water may then be ascertained by the standard solution of soap in ordinary use. Having now determined the relative proportions of the water which is to be softened, and of the solution of soluble carbonate or bicarbonate which must be used in order to effect the desired amount of softening, the size of the orifices of the rectangular valves or openings through which either flows into the second mixing tank must be adjusted in the like proportions. For example, if 1,000 measures (say one litre) of the water required 10 measures (say 10 cubic centimetres) of the solution of carbonate, the two orifices must have the relative areas of 1,000 and 10. This adjustment is effected by having a slide plate fitting into one or both of the rectangular openings, which is moved by a screw so as to increase or diminish the size of the openings. A graduated scale is placed either by the side of the sliding plate or on a circular plate at the end of the screw, which is used for turning it, or in both positions combined. In this manner the relative areas of the openings can be readily and accurately adjusted; but care must be taken that the fluid issuing from each opening has as nearly as possible the same head of pressure; a float can be arranged so as to cut off the orifices in equal proportions as the mixing tank becomes filled.—*English Mechanic*.

DECOMPOSITION OF THE "ELEMENT" CHLORINE.

It will be within the memory of many readers that some recent experiments of Mr. Lockyer pointed to the conjecture that many of the so-called simple elements were compound bodies. Still more recently professor Meyer, a Swiss chemist, has arrived at some confirmatory results, and has obtained a litre of oxygen from pure chlorine. The *Times* has an interesting notice of the matter, and remarks that "chemists and physicists now almost universally entertain the theory that all bodies, whether gaseous, liquid, or solid, consist of extremely minute particles or molecules. Each molecule consists of a definite quantity of matter, which is exactly the same for all molecules of the same substance. The molecules of most substances, however, are themselves compounds, and consist of atoms which, as the name implies, are held to be indivisible; but whereas the molecules of what are ordinarily termed compound bodies contain dissimilar atoms, the molecules of the so-called elements are supposed to be composed of similar atoms. For example, in a molecule of water two atoms of hydrogen are combined with a single atom of oxygen, but a molecule of hydrogen consists of two atoms of hydrogen, and a molecule of oxygen of two atoms of oxygen. The molecules of the elements do not always contain two atoms, however; the molecule of mercury, consisting of a single atom, and that of phosphorus of no less than four.

"To determine the number of atoms which compose the molecule of any given substance is one of the most important operations the chemist is called upon to perform. The method in use is based on the theory that equal volumes of all substances in the state of gas, if at the same temperature and pressure, contain equal numbers of molecules; so that, whatever the actual number of molecules in a given volume of gas, if the weight of the given volume of gas be ascertained and compared with the weight of the same volume of another gas under precisely the same conditions of temperature and pressure, numbers are obtained which represent the relative weights of the molecules of the two gases in question. These

numbers are always the same whatever the temperature and pressure at which the comparison is made, provided that no decomposition of the molecules of either of the substances occurs. The determination in question is known as the determination of the gaseous or vapour density of a substance.

"Either air or hydrogen is taken as the standard of comparison, the latter being the more convenient, as it is universally adopted as the standard to which the atomic weights of the elements are referred, the atomic weight of an element being a number which represents the weight of its atom supposing that of the hydrogen atom to be 1. Using the hydrogen standard, if we say, for example, that the density of oxygen is 16, we mean simply that a given volume of oxygen weighs 16 times as much as an equal volume of hydrogen.

"Certain considerations which need not here be entered into lead us to suppose that the molecule of hydrogen consists, as we have said, of two atoms, so that if the weight of the hydrogen atom be unity, the weight of its molecule is twice as great; in other words, 1 being the atomic weight of hydrogen, 2 is the molecular weight of hydrogen. Hence if we determine the density of any substance in the state of gas relatively to that of hydrogen, we have merely to double the number representing its density in order to obtain the weight of its molecule as compared with that of the hydrogen molecule; and dividing the number representing the molecular weight of an element by its atomic weight, we obtain a quotient which expresses the number of atoms in the molecule of the particular element. Thus, the density of ordinary oxygen being 16, its molecular weight is twice 16, or 32; and, therefore, since 16 is the atomic weight of oxygen, the molecule of oxygen consists of two atoms. But if we take oxygen in the state of ozone, we find that its density is higher than that of ordinary oxygen—viz., 24; the ozone molecule is therefore twice 24 times as heavy as the hydrogen molecule; and since the quotient of 48 divided by 16 is 3, we conclude that it consists of three atoms, the molecule of ordinary oxygen consisting of only two atoms. When moderately heated, ozone is entirely converted into ordinary oxygen, and the density diminishes from 24 to 16, or to two-thirds of its value.

Some few months ago Professor Victor Meyer, of Zurich, devised a new, most ingenious, and expeditious method of determining gaseous or vapour densities, and as it enabled him to work at high temperatures with far greater facility than any of the methods previously known, he was led, in conjunction with Herr C. Meyer, to make experiments with a variety of substances, and among others with the "element" chlorine. The results they obtained at temperatures not much exceeding 600 degrees centigrade were in accordance with previous observations made at lower temperatures, being such as to indicate that the molecules of chlorine, like those of hydrogen and oxygen, each consisted of two atoms. But on extending their observations to higher temperatures they noticed that the density diminished until at about 1,200 degrees it was only two-thirds as great as at 600 degrees and below. No further alteration, however, occurred, on heating to nearly 1,600 degrees. The change in density being precisely similar to that observed on heating ozone, it would appear possible that a similar kind of alteration in the composition of the molecules of chlorine had occurred—that is to say, that the chlorine molecules are composed of the same kind of atoms, but in different numbers at low and at high temperatures. There are, however, a variety of considerations opposed to such a conclusion, and it would appear more probable that chlorine is not an element, as has hitherto been supposed, but a compound of dissimilar atoms. It is stated that the Messrs. Meyer have actually succeeded in proving this and that oxygen is one of the components of chlorine; but no particulars of their experiments have as yet come to hand.

"Such a discovery would be the first approach to a substantiation of Mr. Lockyer's views of the non-elementary character of the so-called elements to which we had occasion to refer at length some few months ago, and which were chiefly based on observations of the spectra of the metallic elements taken in conjunction with solar and stellar phenomena."

The Photographic News.

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COPYRIGHT IN PHOTOGRAPHS.

As our readers are aware, a Royal Commission was appointed to consider the condition of copyright in this country. Nothing could well be more unsatisfactory than the law of copyright as it stands. Doubts have been expressed as to whether there was any protection to copyright at common law, and the whole of the statute law is fragmentary and incomplete, being contained in nearly a score of different Acts, mostly cumbrous, complicated, and uncertain in their interpretation. A Bill has been recently introduced into Parliament by Lord John Manners for the purpose of consolidating and amending the law of copyright, both in works of literature and art. Such a Bill is necessarily a very elaborate document; but it is, so far as we have at present mastered its provisions, as well-considered, just, and free from complications as the circumstances seem to permit. The provisions for copyright in books seem to meet many difficulties which have been felt unsatisfactory in the existing law; but with that portion of the Bill our readers are not especially concerned.

It is with copyright in works of fine art, especially in photographs, that we are definitely concerned here. The clauses especially devoted to copyright in photographs are free from the cumbrousness and uncertainty which characterized the provisions of the Fine Art Copyright Act. The general provisions in relation to photographs resemble those applying to paintings, but are made specific by definite provisions where the varying conditions of the respective cases demand special arrangements. Copyright accrues to the author of any original painting or photograph, whether the author is a British subject or not; and the law is to apply throughout Her Majesty's dominions at home and abroad.

The copyright in a photograph is to endure for thirty years from the date of publication. Any person who, without the consent of the owner of the copyright, shall copy the picture, or any material part thereof, or shall import, sell, publish, exhibit for sale, or have in his possession for sale or exhibition, shall be held to infringe the law, and be liable for penalties. Persons infringing copyright as protected by the proposed Act will be liable to a fine not exceeding ten pounds, and double the full price at which such paintings, photographs, or negatives have been sold or offered for sale. Such penalties to be paid to the person aggrieved.

An important point about which doubt has existed is here definitely provided for: the copyright in a photograph shall belong to the proprietor of the negative from which the photograph is printed. This definitely protects the photographer. By a succeeding clause, however, sitter in portraiture is equally protected, as the clause en-

acts that "where the photograph has been made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit any copy of the photograph without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any copy of the photograph, and, if the copyright is infringed, of taking proceedings with respect to the infringement, as if he were the proprietor of the copyright. This clause, it will be seen, defines strictly the rights of photographer and sitter. A photographer may not, without consent, exhibit or sell portraits of sitters, neither may a sitter produce or obtain copies of his portrait, as the copyright rests in the possessor of the original negative.

There are provisions for registration, and for colonial and international copyright, and provisions for fraudulently affixing names, or altering a picture, &c. Altogether the provisions of the new Bill are clearer, fuller, and more satisfactory than those of the existing Act, and should they pass into law will be much more satisfactory to all concerned than anything which has hitherto prevailed.

FRACAS IN A STUDIO.

WE read with regret, in a police report, some details of a painful scene in Mr. Faulkner's studio in Baker Street, from which it would seem that a gentleman who was disappointed with the portrait of an old lady and another one of a child emphasized his disapproval in a manner which led, according to Mr. Faulkner's statement, to a serious personal encounter. The customer, it appears, characterized the work as artistically bad, and the transaction as a swindle, demanding the return of his money, which was very naturally refused.

A newspaper report describes the affair as a "Desperate Fight in a Baker Street Photographic Studio," and says:—

"On Tuesday, at the Marylebone Police Court, Mr. Bertram Fulke Hartshorne, of 11, Neville Terrace, Onslow Gardens, was summoned for assaulting and beating Robert Faulkner, photographer, at 21, Baker Street, on July 12th. There was also a cross summons against Mr. Faulkner for assaulting and beating Mr. Hartshorne, at the same time and place.

"Both parties appeared by counsel. The facts of the case having been shortly stated in the first case, Robert Faulkner, the complainant, said that previously to the 12th July he had taken photographs of the defendant's mother and child. On the 12th, the defendant, accompanied by his mother, wife, and child, came into the drawing-room of the studio, and complained in very unreasonable language of the photograph. His manner was very insulting. He had paid witness £2 2s. Witness said the photographs were as good as could be expected, the lady being very old, and the child having been fidgetty. Witness told him he had another negative, but as the defendant's manner was so insulting, he left him, and the defendant left with the other members of the party. The defendant soon afterwards came up to him in the gallery, and said, 'Am I to understand from you that you refuse to take my photograph again?' Witness said he did refuse. The defendant asked for his money back again, but witness said he should not give it back. The defendant then said he would publish this matter amongst all his friends, and called witness a swindler. Witness went towards him, when the defendant shortened his umbrella, holding it in the middle, and aimed a blow at him. Witness rushed in to the defendant, when he felt a blow from the umbrella. He struck out in self-protection, and they both fell to the ground. Several persons then came up, and witness complained to the defendant as to the conduct of which he had been guilty.

"Cross-examined: He walked quickly across the room

to ask the defendant why he had called him a swindler. He dodged the first blow of the defendant. He saw the defendant had a black eye after the affair, and it was natural to suppose it was from the blow witness gave him with his fist. He saw that if he did not rush in at the defendant he would have had a most murderous blow that might have been very dangerous.

"Mr. de Rutzen asked if this was not essentially a case that ought to be settled. If a dozen more witnesses were called they would not alter the facts. Everything was now known. There seemed to have been heat on both sides.

"The learned counsel conferred together, but could not agree, the counsel for the complainant stating that certain terms had been used towards the latter, which must be withdrawn.

"The objectionable words not being withdrawn, the case proceeded. The parties changed places for a time, and the second summons was called on.

"Mr. Hartshorne stated that on the day mentioned he went to the shop of the defendant Faulkner about the photograph, and pointed that it was not a good one. It was not artistically good, and the defendant had taken witness's mother differently to the order, which was for a three-quarter face. The defendant treated him in a very offhand manner, and said witness did not understand photographs. Defendant then walked away, and Miss Scott, the assistant, said that he could have another photograph taken on payment of half-a-guinea, or on an order of extra copies being given. He took the ladies away, and then went up to the defendant to ask him if it were correct that he declined to return the two guineas, or to take another photograph. Defendant said it was correct, and afterwards said he was no gentleman, and witness said he had been swindled. Immediately on his saying this, the defendant flew at him and caught hold of his shirt, and witness, who was holding his umbrella in the middle, hit him on the shoulder to ward him off. Defendant then struck him in the eye, and it bled very much, and was afterwards closed up. Witness and defendant closed together and fell to the ground, and they were afterwards separated. He left the place and went home, and he was confined there for some days from the effects of the blow, and had to be seen by a doctor.

"Cross-examined: He did not say the defendant was a swindler. He did not use the umbrella until the defendant had seized him and said, 'You call me a swindler?'

"Other evidence was given on the two summonses, it being shown that Mr. Faulkner's assistant, Miss Scott, was thrown to the ground in the struggle between the parties.

"Mr. De Rutzen observed that Mr. Hartshorne had a perfect right to go to Mr. Faulkner's shop and complain about the photographs, but it seemed to have led to unpleasant remarks, and then Faulkner took upon himself to call the other 'no gentleman,' which was not a pleasant thing to say. Hartshorne said he had been swindled, and then each thought the other was going to strike him, and the assaults were committed. He should dismiss both summonses, and he thought both of the parties should apologise to Miss Scott for having thrown her to the ground."

The magistrate appears to have been puzzled by the conflicting evidence, and, regarding both parties as to blame, dismissed both summonses. It scarcely seems to be a legitimate conclusion that because the portraits of an old woman and a baby were not satisfactory—a most common and natural circumstance—a customer should be at liberty to proceed to a breach of the peace, or to use language which would lead to a breach of the peace. We know nothing of the character of the pictures, but we know that, artistically, Mr. Faulkner does not often fail. The ease and the decision here lead to nothing, and establish no precedent.

FRENCH CORRESPONDENCE.

OBSERVATIONS ON THE CONDITION OF THE ART OF PHOTOGRAPHY IN FRANCE.

If we desire to be really useful we must never hesitate to speak the truth. It is in this spirit that I feel compelled to declare frankly, and without fear of contradiction, that France, the beautiful country to which photography owes its birth, has allowed itself to be outstripped by other nations in respect of its appreciation of the value of what is *par excellence* a popular art. Photography, though it does not depend on the creative powers of those who devote themselves to it—and this is the reason why it is so often denied the right to be classed among the fine arts—exacts constant and conscientious practice; it requires special aptitude and close attention to the continua, wants of the professional public; and, as a consequence, its followers must march in the van of progress.

With a few rare exceptions, I fear that French photographers do not comply with these conditions. They are very slow in appreciating the value of technical improvements; they are with great difficulty induced to quit the beaten paths of routine, short of being absolutely forced to do so. Unlike those who are imbued with the noble desire of attaining the honours of a distinguished position, they never seem to have the slightest ambition to rise above the crowd. The majority of them do not seek to teach themselves; they read very little, and often systematically ignore every new process, because to adopt it would disturb their accustomed habits. When a new discovery, which might be of great advantage to them in their work, is mentioned in their hearing, they look as if it had dropped from the skies, and that, though the said discovery may be known all the world over, and perhaps has been the cause of success and fortune to a more intelligent rival.

I do not think I am at all overrunning the bounds of probability in asserting that there are few photographers—and it is especially in Paris itself that I have had occasion to observe what many will think almost incredible—who know anything of the chemical products that they work with, beyond the name marked on the label of the bottle, and the proper time to use them. They are completely ignorant of the scientific properties of those products, and I feel persuaded that there are not ten in a thousand of all the photographers in France who are capable of making a chemical analysis.

Photography seems to be treated like politics or geography; it is dabbled in without much thought given to it, and then its professors think themselves strong in it. At the present moment the photographs which are the greatest favourites with the public owe their attractiveness to the excellence of the retouching. The productions of the best photographic houses in France absolutely depend on the retoucher, for an untouched negative, or a portrait that has not been worked upon with the pencil, would be as impossible a phenomenon as a ballet dancer without legs. And yet it is quite impossible for a portrait painter to produce, by copying a photograph alone, a portrait which should possess any resemblance to the original. Delicacies of colour have disappeared, light and shade are altered, lines are finished inaccurately and unskilfully, the expression, the feeling, all exist no longer! To a customer who complains of the want of likeness the photographer replies stiffly that there cannot possibly be a mistake, as he invents nothing; but he forgets all the time the retoucher, who works without seeing the original, and has had the impertinence to improve the truth of the sun's rays, instead of confining himself to correcting the defects due to the imperfections of the process.

And yet, notwithstanding the constant complaints of artists at the incompetence of retouchers, no school for instruction in retouching has been established in France. Photographers are satisfied to take the first assistant that

offers—often a young lady without the slightest knowledge of drawing—to execute the delicate work of working-up their negatives or their prints.

It is true there does not exist in the country where Daguerre was born a public lecturer on photography, and we have, therefore, no right to complain that instruction is not given in the art of retouching; we can only look for the aid when we have established the means. But this only goes abundantly to prove what I asserted at starting, that France does not hold—as she ought to hold—the first place in photography; and what I mean to say is, that if this fact be recognized—if it be properly and unostentatiously deplored—there will be some hope that she may rise, by right of birth and by right of conquest, from this inferior position. By proclaiming the truth to her, I may, I trust, be acknowledged to be acting for her advantage.

This condition of inferiority which she now occupies has struck with great force all those who are interested in photographic progress, especially since the use of dry emulsions has become everywhere so very prevalent. In France alone have the processes depending on these emulsions been met with coolness. Here, the advantages they offer are still subjects of discussion, and their value and importance are discredited; there is even—though I can scarcely bring myself to confess it—serious hostility manifested against them. It is only right to acknowledge that the photographic societies and special journals do their best to get rid of this feeling, and to cause the processes in question to take root among us, but they do not make many converts; and though there are certain specialists who by their works and their researches cause a belief to exist that there is in this country a movement in favour of what I call the “new films,” it must in truth be confessed that this movement has not yet, unfortunately, spread to the photographic studios.

It may well be asked, How is an antagonism of this description maintained? We cannot admit that it is due to the fact of these new processes having been imported from abroad; however true it may be that articles of foreign invention or manufacture take a long time in making their way in France—often because the inventors or manufacturers take no trouble to make them known—there is no doubt that Frenchmen never show themselves exclusive in this respect, and, in the spirit of every intelligent people, are ready to accept improvements which have not taken their rise among themselves, without asking what is their nationality.

There is, in fact, no means of explaining the hostility that I have just mentioned as maintaining itself here in every branch of the profession except among those who are amateurs, tourists, or members of scientific societies. Professional photographers are in the habit of complaining of the importance which is attributed to the use of dry plates, and are courageous enough to ask seriously whether the continuous improvements which are from day to day introduced into photographic processes may not have a dangerous aspect for the commercial practice of photography. If I had not heard them in several quarters simultaneously, I should hardly venture to make myself the echo of such inanities; I have even heard these improvements described as threatening to destroy the profession.

Was the profession ruined when the negative processes overthrew the old positive processes of Niepce and Daguerre? Have horses been done away with since railways came into existence? Are there no longer spinners and weavers now that mules and power-looms have been introduced? One has only to observe the streets of a manufacturing town when the hands leave work for the day, to receive an authoritative answer to the question.

The French photographer is thoroughly in the wrong when he listens to the sullen voice of prejudice, and shows

such an indisposition to accept an improvement which cannot fail to open up a new era of prosperity for his art. He must be induced to follow in the forward march of other nations; it is a law which he must obey, or, as sure as fate, he will be trampled down. There is a kind of feeling of decay which seems to be prevailing among us, and great fears are entertained as to the consequences it may entail; this spirit we especially note, to our grief, at the meetings of our societies and at our exhibitions. Each succeeding meeting has a less number of persons to take part in it; each exhibition shows fewer and fewer exhibitors. The Exhibition of Science Applied to Industry has now been open for more than a month, and the number of exhibitors in the photographic section may be counted on the fingers—and that, in a city like Paris!

This result is really disheartening. It is not merely the opinion of a pessimist which, in the face of facts like these, maintains that France will soon lose the position in the photographic world she has so gloriously maintained, if she do not watch well over her future.

K. VERSNAEYEN.

ON THE PERMANENCE OF PHOTOGRAPHIC PICTURES.

BY DR. JULIUS SCHNAUSS.*

FORMERLY, when the art of photography was practised exclusively in the service of the general public, and more especially for taking portraits, attention was soon and frequently drawn to the instability of photographic productions, particularly of those on paper. This defect was an unpleasant one for the owner; but still it was not of so much importance as now-a-days, when photography is employed as an aid to science in obtaining reproductions which may be of inestimable value to posterity. I need only mention astronomical photographs, and those of rare manuscripts and prints, of the pictures of plants which seldom come into bloom, and of a thousand other infrequently occurring natural phenomena. The fading of a photograph of this kind may under certain circumstances occasion an irreparable loss. We possess at the present day three complete different methods for the reproduction of prints for photographic negatives:—1. The original silver printing, as it is called; 2. The pigment or carbon printing; 3. Printing in the press by means of fatty or printer's ink.

Silver Printing.—The foundation of this process is silver chloride, of which a thin film is produced in and on the paper by means of a double decomposition of some chlorine compound and of silver nitrate; the action of the latter substance must take place after that of the former, so that an excess of silver nitrate remains always in the paper, for silver chloride alone would render the prints grey and monotonous. At first this kind of copying paper was prepared by floating a sheet of plain paper on a solution of chloride of sodium or ammonium, and, after drying it, floating it again on one of silver nitrate; after drying a second time, the paper could be employed at once by exposing it under a glass or paper negative. Prints produced by this method, however, never possessed the sharpness of the original negative; it was, therefore, found necessary to give the paper a shining surface not liable to be injured by the various baths to which it was submitted. For this purpose the albumen of eggs proved itself to be specially adapted, and in consequence the manufacture of albumenized paper was developed to such an extent that the price of eggs rose considerably in the market. Persons unacquainted with the subject can form no idea of the enormous quantities of raw materials annually consumed by photographic laboratories in Germany alone. The same influence was observed in the rise of the price of silver, until, fortunately for photographers, a gold standard was

* Photographisches Wochenblatt.

established in the currency of the German empire, and in consequence the most important of all the chemicals used in photography—silver nitrate—became much cheaper.

The albumenized paper contained the requisite amount of an alkaline chloride, so that the operator can put it at once to float on the silver bath, after which it is ready for use. From the fact of albumen also forming with silver an insoluble compound, sensitive to light, a further cause of the rapid deterioration of these photographs arises, for in the so-called fixing process, which silver chloride pictures have to undergo in order to remove the salt which has not been acted on by light, and thus to render the pictures insensitive under further exposure, my experiments prove that the albuminate of silver is not simultaneously decomposed. It is also a fact, of which anyone can convince himself by inspecting the first best photographer's show-case that is exposed occasionally to strong sunlight, that albumenized pictures gradually acquire a reddish-yellow tint over the whole surface.

To another cause is due the fading of photographs on paper in general, especially of those which have been kept in a damp place; this defect is of still greater importance than the one previously mentioned, as it affects also those pictures which are kept in the dark. This fading is, more accurately speaking, a turning yellow of the deep brown or black tones of a finished chloride of silver photograph, and is caused, according to the results of careful investigation, by the formation of an extremely thin film of silver sulphide. It might be supposed that the sulphur of this compound is, in the case of albumenized prints, at least partially derived from the albumen, but in reality it is given off in large quantities by the sodium hyposulphite (or, as it is now-a-days designated, "thiosulphate") which is used for fixing the image, and for which, unfortunately, up to the present, no substitute perfectly free from sulphur has been found. During the operation of fixing, sodium chloride and silver hyposulphite are first formed from the silver chloride and the sodium hyposulphite the silver hyposulphite, by taking two more atoms from the sodium hyposulphite, forms a double salt which is soluble in an excess of the sodium salt. Silver hyposulphite alone is decomposed when deposited, and, as is well known, forms silver sulphide. A similar change, accompanied by the production of free sulphur, takes place in the course of time in the substance of the paper; this sulphur, in a nascent state, attacks the silver of the photograph, unless the greatest care has been taken in the manipulation to remove by washing every trace of the double salt of sodium and silver. Fortunately, there are various means of checking the entire absence of the hyposulphurous salts in the last wash water, but the use of them in practice is limited, more especially as this most important testing operation is generally to be watched by mere assistants to photographers.

Pigment or Carbon Printing.—For the reproduction of photographs, therefore, possessing some guarantee of permanence, it became necessary to try other methods not depending on the use of such unstable salts. A method of this kind has lately been invented, as is known, under the name of pigment or carbon printing, but experience has also shown in this case the inexpediency of prematurely cherishing illusions. The foundation of the pigment process is gelatine sensitized with potassium bichromate, and tinted with some colouring material. Doubts may at first be entertained of the permanence of these carbon prints, seeing that they depend on the presence of such an easily decomposable substance as gelatine; but the fact remains that during the developing of the image this gelatine is for the most part removed. That portion of the gelatine which remains on the paper has been completely altered in its chemical properties by the action of the chromium compounds under the influence of light, and has become nearly perfectly insoluble in water. As an extra precaution to render them completely

resistant, the prints are passed through a solution of alum. No fear need, therefore, be entertained of the gelatine as a cause of the picture's spoiling; but, on the other hand, there is much more reason to suspect the colouring material employed, to which really the picture itself is due. Pure carbon, in a state of finest subdivision, is a thoroughly permanent pigment, and should always be chosen for prints of special value. For objects to be rendered artistically, however, pure black is not a pleasing colour, and the manufacturers of pigment paper are therefore in the habit of adding some carmine or aniline colouring material in order to produce a warmer and more agreeable tint. Experience, however, proves that the permanence of the picture suffers by the addition, for these colours are liable to change under exposure to light. When we also consider that, in the hands of workmen who are not strictly conscientious, the operations of developing and washing are apt to be scamped, and that the chromium salts in consequence are not always completely removed, it is easy to see that the fading of carbon prints may even be expected. Occasionally, too, the gelatine picture peels off partially or completely from its paper support when the latter has not been very carefully prepared.

Printing in Fatty Ink.—The only process which offers a complete guarantee for the permanence of the pictures produced by means of it is the one approved by an experience of centuries—the printing in printers' or fatty ink—a substance which will last longer than the paper to which it is applied. Recent discoveries enable us from any negative to obtain a positive print on paper in fatty ink, and that with the same rapidity as is secured by the steam press in the case of ordinary type printing, it being only necessary to use greater care in rolling up. In selecting the particular method for obtaining a print, special regard must be paid to the nature of the object that is to be reproduced—whether, that is, it contains half-tones, or whether the shading can be given by lines and points, as is the case in copper plates, wood-cuts, &c. In the latter case photo-lithography and photo-zincography are the cheapest methods; but when half-tones have to be rendered, collotype must be used. Generally, we may say that collotype printing is the most important of all the methods of this kind of photographic printing. From even a good collotype plate one thousand prints can easily be taken, and these can be sold at a very cheap rate when pressed on dull writing or thin cartridge paper. Any injury which may happen to the plate can be readily repaired.

COPYRIGHT IN BOOKS AND PICTURES.

A new Bill, based on the report of the Commission on Copyright, has been introduced by Lord John Manners:—

According to it the author of a book first published in Her Majesty's dominions will be entitled to the copyright throughout those dominions, whether he is a British subject or not, or whether he is domiciled or resident in those dominions or not. With regard to a book first published out of Her Majesty's dominions, the provision is that the author may acquire the copyright by republishing it in those dominions within three years from the first publication, if, at the time of the first publication, he is either a British subject or an alien domiciled in Her Majesty's dominions. In this case the copyright would date from their publication. The time for the duration of the copyright is thus regulated by the Bill:—If the book be published in the lifetime and under the true name of the author, the copyright would endure for the life of the author, and for thirty years after his death; but for thirty years only from the date of the first publication if the book be not published in the author's true name, or if it be published after his death. With regard to what would constitute an infringement of the copyright, not only would it be illegal to print a copy of the book without consent, but to print an abridgment or a translation of it, or to dramatize it by preparing or adapting it for representation on the stage as a dramatic piece, or to cause a dramatized version of it to be publicly performed. It is provided that no legal proceedings be taken or forfeiture in

current in respect of any infringement of copyright until registration has been effected with the Stationers' Company. And to register, the proprietor must deliver to the Registrar a copy of the book, accompanied by a verified statement showing the name, address, and calling of the publisher and of the proprietor of the copyright, and the place and date of the first publication. If the author's true name is published, the statement must also include his name, address, and calling. The book thus delivered to the Registrar is directed to be sent on by him to the British Museum. Moreover, it is provided that the assignment of a copyright be invalid unless it be registered; and that every registered proprietor shall have absolute power of disposing of the copyright, with the exception that it is left open for rules to be made for caveats being entered against any such disposition. These and other rules for the regulation of registration are to be made by the Board of Trade, subject to the approval of Parliament. In the case of any work published in series, it is provided for the copyright of the whole to belong to the proprietor, as if he were the author of the whole, when the parts have been composed on the terms that the copyright in the composition shall belong to the proprietor. This rule is, however, subject to certain qualifications, among which is one which says that, except with regard to an encyclopædia, the proprietor of the copyright may not publish any of the compositions separately from the rest of the book without the consent of the author. And after three years from the first publication, the right of publishing the composition separately would vest exclusively in the author. The provisions of the Bill with respect to books published in series are made to apply to newspapers as regards original compositions of a literary character, but not as regards the portion containing news.

One of the provisions imposes no small burden on the British Museum in directing that the publisher of a newspaper must send a copy of every number to the Museum within a week of publication. With regard to lectures, it is provided that if they be other than those delivered in a university, public school, college, or public foundation, or by any person in virtue of or according to a charter, the author is to be entitled to copyright in them, just as if they were books. It will not, however, be necessary to register a lecture which is not published. As long as a lecture has not been printed and published by the author, a man will infringe the copyright if he delivers the lecture without the written consent of the proprietor. But a newspaper is not to be debarred from publishing a report of the lecture in the current edition, unless the author before or at the time of delivering the lecture gave notice of a prohibition. The copyright in dramatic pieces or musical compositions which are either printed and published or publicly performed, is subjected by the Bill to the following rules:—It is an infringement to perform one publicly, or any part of one, or any abridgment or adaptation, without the written consent of the proprietor. If a piece or composition is publicly performed, but not printed and published as a book, it may be registered without the delivery of a copy or a statement of the publisher's name. The first public performance or the first publication by printing and publishing as a book, whichever may be the earliest in date, is to be deemed the first "publication." When the first public performance takes place out of Her Majesty's dominions, copyright may be acquired either by a public performance or by publication as a book in those dominions within three years. Some annoyance would, no doubt, be saved by the provision that the purchaser of a printed copy of a musical composition is to have the right of publicly performing it, unless the copy contains on the title-page, or in some other conspicuous position, a statement that the purchaser will not have that right without consent, and also specifies the name and address of some person authorized to give the consent. And a purchaser who cannot with reasonable diligence find the person so specified, is authorized by the Bill to perform the piece without any consent. Moreover, where a musical composition is published with words, the proprietor of the copyright in the words is not authorized to prevent a person from using the words with the music at any public performance. Part 2 of the Bill relates to paintings, sculptures, engravings, and photographs; part 3 to colonial copyright; part 4 to foreign copyright; and part 5 contains some general provisions relating to legal proceedings and the like.

COPYRIGHT IN PHOTOGRAPHS.

The Bill enacts as regards photographs as follows:—

Painting.—1. The author of an original painting shall be entitled to copyright therein throughout Her Majesty's dominions, whether the painting is first published in or out of Her Majesty's

dominions, and whether the author is or is not a British subject, or domiciled or resident in Her Majesty's dominions, unless the painting is first published out of Her Majesty's dominions and the author thereof is not a British subject and not domiciled in Her Majesty's dominions at the time of the first publication.

2. Provided that there shall be no copyright in a painting unless the painting, and every copy thereof made with the author's consent before the painting is published, bears the author's name and the date of the execution of the painting.

Copyright in a painting published after the commencement of this Act shall endure for the following terms:—

(a.) If the painting is published in the lifetime of the author, for the life of the author and thirty years after his death.

(b.) If the painting is published after the death of the author, for thirty years from the date of publication.

Every person shall be deemed to infringe the copyright in a painting who, during the term of copyright, does, without the written consent of the proprietor of the copyright, any of the following things; namely:—

(a.) Makes or causes to be made any copy of the painting; or (b.) imports or causes to be imported for sale or exhibition any copy of the painting made in any foreign country or made in infringement of copyright; or (c.) sells, publishes, exposes for sale, or exhibits, or causes to be sold, published, exposed for sale, or exhibited, or has in his possession for sale and exhibition, any copy of the painting made or imported in infringement of copyright.

Where a painting is sold or is executed on the order of any person for valuable consideration, the copyright therein shall vest in the purchaser or person on whose order it is executed, unless the author reserves it by written agreement.

Where the copyright in a painting is reserved by agreement—

1. The author shall not, without the consent of the owner for the time being of the painting, execute or authorize any person to execute any copy thereof; and the owner shall have the same right of preventing the execution of any such copy as if he were the proprietor of the copyright.

2. If the copyright is infringed the owner of the painting shall be entitled to take the same proceedings in respect of the infringement as if he were the proprietor of the copyright.

3. Provided that if the infringement is by any person other than the author, the owner, before he takes any legal proceedings in respect thereof, shall give to the proprietor of the copyright notice of the infringement, and of his intention to take proceedings in case the proprietor fails to do so, and shall give the proprietor an opportunity of taking proceedings to prevent the infringement.

4. The proprietor of the copyright shall, or if he fails after notice from the owner of the painting, then that owner may register the copyright in the painting by delivering to the registrar a statement, verified in the prescribed manner, showing the nature and subject of the painting, the name, address, and calling of the author, of the proprietor of the copyright, and of the owner of the painting, and the date of and parties to the agreement.

5. The statement may be in or to the effect of the form contained in the First Schedule to this Act, or in or to the effect of such other form as may for the time being be prescribed.

6. Until the copyright is registered, no legal proceedings shall be taken or forfeiture incurred in respect of any infringement of copyright in the painting.

7. Unless the copyright is registered within one month after the date of the agreement, no legal proceedings shall be taken or forfeiture incurred in respect of any copy made or imported before the date of registration, whether any such copy is sold or exhibited before or after that date.

Nothing in this Act shall prejudice the right of a person to copy or use any painting in which there is no copyright, or to represent any scene or object notwithstanding that there may be copyright in some representation of that scene or object.

Nothing in this Act shall prevent a person who has sold a painting from selling or using any models, casts, sketches, or studies made by him for the purpose of making the painting, so that he do not repeat or colourably imitate the design of the painting.

Sculptures.—1. The provisions of this Act with respect to paintings shall apply to sculptures as if they were herein re-enacted with the substitution of "sculpture" for "painting."

2. The author of a copy of a sculpture in which there is no

copyright, or which was copied with the consent in writing of the proprietor of the copyright, shall be entitled to the same copyright as if his copy were an original sculpture.

Engravings and Photographs.—1. The provisions of this Act with respect to paintings shall apply to engravings as if they were herein re-enacted with the substitution of "engraving" for "painting," subject as follows:—*a.* The provisions of this Act as to the name of the author and date of execution shall not apply, but there shall be no copyright in an engraving unless the name of the author is printed thereon. *b.* The copyright in an engraving shall belong to the proprietor of the plate, stone, or other instrument by means of which copies of the engraving are produced. *c.* Where the engraving is made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit, any copy of the engraving without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any copy of the engraving, and, if the copyright is infringed, of taking proceedings in respect of the infringement, as if he were the proprietor of the copyright.

The provisions of this Act with respect to paintings shall apply to photographs as if they were herein re-enacted with the substitution of "photograph" for "painting," subject as follows:—*a.* The provisions of this Act as to the name of the author and date of execution shall not apply:—*b.* The copyright in a photograph shall endure for thirty years from the date of publication of the photograph, and no longer:—*c.* The copyright in a photograph shall belong to the proprietor of the negative from which the photograph is printed:—*d.* Where the photograph has been made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit any copy of the photograph without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any copy of the photograph, and, if the copyright is infringed, of taking proceedings in respect of the infringement, as if he were the proprietor of the copyright.

The provisions of this Act with respect to the registration of the copyright in books shall apply to the copyright in engravings and photographs as if they were herein re-enacted with the substitution of "engraving" or "photograph," as the case requires, for "book;" except that where an engraving or photograph has not a distinctive title there shall be substituted for the title in the statement required on registration a short description of the nature and subject of the work.

General Provisions as to Works of Art.—Every person who commits any of the following offences; that is to say,—*a.* fraudulently signs or otherwise affixes, or causes to be signed or affixed, on or to any painting, sculpture, engraving, photograph, or negative of a photograph, any name, initials, or monogram; or,—*b.* Fraudulently sells, publishes, exhibits, offers for sale, or exposes for sale or exhibition, any painting, sculpture, engraving, photograph, or negative of a photograph, having thereon the name, initials, or monogram of a person who did not make the painting, sculpture, engraving, photograph, or negative; or,—*c.* Fraudulently sells, publishes, exhibits, offers for sale, or exposes for sale or exhibition, any painting, sculpture, engraving, photograph, or negative of a photograph, as having been made by the author of the original work of which it is a copy or imitation; or,—*d.* Where a painting, sculpture, engraving, photograph, or negative of a photograph has been sold, and subsequently altered during the life of the author and without his consent, knowingly sells, publishes, or offers for sale, the work so altered, or any copy thereof, as, or as a copy of, the unaltered work of the author, shall be liable to a fine not exceeding ten pounds and double the full price, if any, at which any such paintings, sculptures, engravings, photographs, or negatives have been sold or offered for sale, and this fine shall be paid to the person aggrieved.

2. Every work which has the name, initials, or monogram of any person so fraudulently signed thereon or affixed thereto, or which, being spurious or altered, is so fraudulently or falsely ascribed to any person, shall be forfeited to that person, or his assigns, or legal personal representatives.

3. Provided that no penalty shall be incurred under this section unless the person whose name, initials, or monogram is or are used, or to whom a spurious or altered work is ascribed, is alive at the time when the offence was committed, or was alive within twenty years before that time.

Where an engraving or photograph is published as part of a

book containing letterpress, it shall, for the purposes of this Act, be deemed part of the book, and not an engraving or photograph; and the copyright in the engraving or photograph shall belong to the proprietor of the copyright in the book.

Correspondence.

THE PHOTOGRAPHIC ARTISTS' CO-OPERATIVE SUPPLY ASSOCIATION.

SIR,—If "Kaleidoscope" means to insinuate that the P. A. C. S. A. "entice shareholders by a fictitious business," or conduct business upon any but strictly honourable principles, I beg to give him the most unqualified denial.

The Association has been well received by photographers and manufacturers; the dealers or middle-men alone object to it.

The object of "Kaleidoscope's" anonymous and unjustifiable attack sufficiently appears by the tone of his communications.

The benefit already conferred upon photographers by the Association is shown by the reduction in prices which many dealers have offered—for cash—since the Association commenced business.—I am, sir, yours obediently,

H. KERR,

Managing Director P. A. C. S. A., Ltd.

43, Charterhouse Square, E.C., Aug. 18.

[We regret exceedingly that Captain Kerr or the P. A. C. S. A. should find in the "Gup" of *Kaleidoscope* any insinuation as to their mode of conducting business. We can, and we willingly do, give them the fullest assurance that no motive could exist to induce our contributor to indulge in any such insinuation. On our own part, if we had seen the slightest doubt implied as to the strict honour of the Association and its management, we certainly should not have permitted it to appear, and we regret that the possible construction of the paragraph should have caused them annoyance. As regards the principles of co-operation, this is not the place to discuss them. No one can for a moment be weak enough to imagine that co-operation, as a system, involves anything censurable or unworthy, or that its application to photography can be more objectionable than it is to the distribution of sugar, cheese, and bacon, in relation to which form of co-operation the public seem to be very well satisfied.—ED.]

SIR,—I do think your "Gup" writer is not warranted in speaking of the P. A. C. S. A. in the way he has done. Let me tell him that my first little order for about £3 saved me 14s., and I can tell him of a dozen photographers who can give him the same experience.

I suppose my account with the Stores will amount to between £500 and £600 per year.—I am, dear sir, yours,
A PHOTOGRAPHER.

[Our correspondent should have remembered that to give weight to his letter he should have signed his name, as the mere signature "A Photographer" possesses no authority. In order that his testimony may duly represent the value it really possesses, we may add that he is one of the most skilful and successful of metropolitan portraitists.—ED.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF IRELAND.

A MEETING was held at the Queen's Institute, Molesworth Street, Dublin, Wednesday, the 13th of August, 8 at p.m., the vice-president, Mr. HOWARD GRUBB, F.R.A.S., in the chair.

The minutes of the preceding meeting having been read and confirmed, five new members were proposed for election at next meeting.

Mr. GEORGE MANSFIELD detailed his method of preparation

of gelatino-bromide plates, and drew attention to the fact that the long and troublesome process of digestion might be obviated by forming the bromide of silver in a very weak solution of the gelatine, which was then boiled for about ten minutes, the remainder of the complement of gelatine in the formula being added when the first solution had cooled down to about 100° Fah. The formula used was a slight modification of Mr. Bennett's with Nelson's No. 1 gelatine. The emulsion thus produced be found sufficiently rapid for the ordinary landscape work of most amateur photographers, and fully capable of rendering good negatives. He found that the addition of one ounce of strong methylated alcohol to every ten ounces of emulsion ensured its keeping good for at least many months. He also advocated the omission from the developer of the bromide generally used; and certainly the large negative shown left nothing to be desired on the score of clearness. The development took place as quickly as with a wet plate. The discussion which followed us to the desirability of extreme rapidity for landscape work, and as to the capability of the gelatine process of rendering the detail in shadows, clearly showed the wide divergence of opinion on the subject.

Mr. ALEXANDER CONAN described the preparation of plates, using, instead of Nelson's No. 1 gelatine, Swinbourne's isinglass, which he found had very many advantages over the former, being more easily worked in warm weather, and not so liable to frill or blister. The plates, as shown, were very free from all blurring, remarkably clear in the shadows, and of a good printing density and colour. They were not, however, as rapid as Swan's plates, and he found, when endeavouring to increase the rapidity, that the difficulty of avoiding fog was considerable. One of Rouch's new patent cameras for 12 by 12 plates was exhibited, and was almost unanimously approved of for its extreme lightness and portability. The replies to the interrogations in the question-box having been disposed of, the meeting adjourned until Wednesday, the 10th September.

Talk in the Studio.

PERSIAN AND ENGLISH ART.—Those of our readers interested in perfect design in art-industries should call at the show-rooms of Messrs. Hukin and Heath, 19, Charterhouse Street, Holborn Circus, where they have now on view some very charming examples of Persian art in gold and silver. Some examples of design by Dr. Christopher Dresser in electro-plate are singularly fine, and worth examination. Simplicity, severity, and perfect function, characterize every piece. The whole display will well repay a visit.

THE WEATHER.—Mr. James Glaisher has supplied to the Registrar-General a short history of the bad weather which set in on the 17th of October, 1878. He has to state that the mean temperature of the eight months ending June, 1879—namely, 41°·65deg.—is the lowest since the celebrated year of great frost, 1814, when it was as low as 40°·4deg. The instances of such low temperature in the last 100 years are those:—In 1783-84 the mean temperature of the eight months ending June was 41°·3deg.; in 1784-85 it was also 41°·3deg.; in 1788-89 it was 41°·2deg.; in 1794-95 it was 40°·9deg.; in 1796-97 it was 41°·3deg.; in 1813-14 it was 40°·4deg.; in 1815-16 it was 41°·7deg.; in 1854-55 it was 41°·9deg.; in 1878-79, 41°·65deg. The weather following June in the years 1784 and 1785 was cold; in the year 1789 it was cold, excepting in December; in 1795 it was cold in July and November; in 1797 it was cold, excepting in July and December; in 1815 it was cold, excepting for a very warm September; in 1855 it was moderately warm to October and cold in November and December. Therefore, as a rule, the same cold weather has continued throughout the year. This is all the comfort Mr. Glaisher has to offer.—*Times*.

To Correspondents.

R. L.—We regret that the article on the dark room must be delayed for a week or two. We will give attention to the point you mention in it.

J. S.—Your rectilinear lens is most suited for architectural and general work.

BROMIDE.—You will find it wise, in commencing the use of gelatine plates, to read up what has been written on the subject in the present and last volume of the NEWS, and in the last YEAR-BOOK. Very much attention has been given to the subject of frilling and the remedies for it, such as alum, methylated spirit, &c. In Mr. Jarman's useful practical articles (see NEWS, July 11th and following number), you will find that in his experience the use of methylated spirit in the developing, fixing, and washing solutions proves a perfect cure.

PRINTER.—Some of the stains are clearly due to hypo, and have been caused by contact with other prints containing hypo. That of *Lodore* is clearly an example of such a case, as the impress of another print with its corner turned up is clearly there on the back of that sent to us; and the markings are due to contact between hypo and silver. The other large print bears a somewhat similar mark, and the stain is from the same cause. The other stains are probably due to a similar cause in a much slighter degree; some are scarcely marked at all. The photographs are good, and well printed. Do not pack quite so firmly in futuro. We could scarcely get the parcel undone without tearing up photographs and the letter in which they were wrapped.

CURATOR.—The black and white of which you speak may be obtained with almost any toning bath. It depends chiefly on the negative. With a good intense negative which permits deep printing you can get any tone. The lime bath is, however, generally most conducive to black tones. Take 2 grains of chloride of gold, and 3 grains of chloride of lime, and dissolve in 16 ounces of water. Allow it to stand twenty-four hours, then use. Remember deep printing is imperative, and little or no washing before toning.

W. W.—The defect in the print you enclose is due, most probably, to imperfect fixation. The hypo solution may have been weak, or partly exhausted, or the temperature of the solution may have been very low, and its solvent powers very slight. In any of which cases a portion of insoluble hyposulphite of silver being left in the print produces, when it becomes decomposed, the dirty mottling seen in the prints. It might possibly arise from the presence of hypo in the mounting cards, which would produce a similar result; but we do not think it likely to be the cause here. 2. We never used a substratum of albumen for opal collodio-chloride pictures, because we believe that albumen conduces to fading, either on paper or glass. Many writers on the subject strongly recommend the preliminary coating of albumen as aiding in securing perfect adhesion of the film, and also in securing a richer and more vigorous image. We, you will find, have never recommended such a substratum, but merely an edging of it to secure adhesion when a tough collodion is used. 3. You will find a letter this week.

A. C. B.—There is no preparation which applied to prints before rolling will give them a surface like enamelling. We know of nothing but enamelling which gives a similar surface. Burnishing, after using a solution of Castile soap in alcohol, gives a very high surface, but not equal to enamelling. Encustic paste improves the print, but does not give a surface like enamelling. Thanks for hint. This answer has been delayed.

SEARCHED IN VAIN.—We do not know the name of the maker of Field's Patent Tent. Possibly some of our readers can inform us and our correspondent.

B. L. M.—The gelatine emulsion processes generally are quite open to the use of everybody, and free from what you term patent trammels. Mr. Kennett holds a patent for a special mode of preparing his pellicle, but you may make and use gelatine emulsion without trenching upon the rights or claims of anyone. Some of the commercial methods are secret; but there are plenty of excellent methods published fully. 2. We cannot very well advise you whether to make your own emulsion, or to purchase plates or materials. Perhaps, at least for a beginning, it would be wise to purchase ready prepared plates; then if you succeed, and like the results, you may try your hand at preparation of your own plates.

R. GOODEN writes to say that a photograph, registered by Mr. Poole, of the Prince of Wales laying the foundation stone of the Royal Hospital for Incurables, is not the copyright of Mr. Poole, who only acted as assistant to Mr. Gooden, who was really commissioned to do the work. Our correspondent will have a definite remedy under the Copyright Act if he can substantiate this statement in a court of law.

J. G.—We do not know any house which makes metal window frames suitable for skylight. Perhaps some of our readers can give information.

B. B., J. C. BURROW, ERNEST KAVANAGH, and other correspondents, in our next.

Several correspondents in our next.

The Photographic News, August 29, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

ADVERTISING BEAUTIES—WHAT LEAVES TO TAKE, AND WHAT TO LEAVE ALONE.

Advertising Beauties.—We are afraid photographers are responsible for a good many of the vanities of the day. We are not going to charge them with anything so had as the introduction of crutch and toothpick, nor, indeed, to pandering to that particular vanity, for although, as a popular song has it,—

"I've been photographed like this,
I've been photographed like that,"

we cannot call to mind having seen a picture of a soi-disant swell with these implements in hand. The originators of the silly custom were probably the gents who are so used to having yard-measure and scissors in hand by day, that they must perforce have something to replace such things by night. But the photographer has his sins, nevertheless, for he is responsible, in a great measure, for that objectionable person—the professional beauty. A lady whose profession it is to be a beauty, and to appear in that character at fancy fairs, would scarcely, one would think, hold a very exalted position; but, thanks to photographers, she has become a very grand personage indeed. She at once takes rank with other notables, with royalty, science, and distinguished murderers. Love levels all; but photography, according to a modern author, is quite as powerful a leveller; you are all put in the same row in the shop windows. They are all stars that are seen there, and, as happens in the firmament, the falling stars show more brilliantly than the rest; they are the most attractive, and hence they are placed "twixt a bishop and a queen." The professional beauty dazzles nearly as much as a falling star, and as she has any number of bewitching dresses at her command, it is only to be expected that, once she has chosen her calling, she should have followed it up and be photographed like this and photographed like that. Actors and actresses doubtless indulge in the same weakness, but in their case there is, at any rate, some excuse. With them, to be portrayed is another mode of advertising, quite as legitimate as the puff paragraphs that appear in the papers, while to be photographed like this and photographed like that is with them simply a representation of various characters. We do not, moreover, look upon their pictures simply because they happen to be well-looking, but because the portraits remind us that the originals have more or less brains. But with the professional beauty, the matter of brains does not come under discussion at all; the case is just the reverse of the spry young *Americaine*, whose speech was, "I mayn't be pretty, but mother says I've got the intellects in me." Now the professional beauty's own duties are to attend fancy fairs and be photographed. They are probably as harmless occupations as can well be conceived, and seeing that the photographer must benefit a good deal by them, it is not likely he will think very harshly of the lovely creatures with whom he has to do. But, nevertheless, he is responsible in a great measure, at any rate to society, if he is not the *raison d'être* of the professional beauty. In the fashionable annuals of forty and fifty years ago there were representations of the belles of society now and then, no doubt, but these florid works had but a limited circulation, which was practically confined to the upper ten. But nowadays, the supply of these portraits is to the public generally, and you may purchase the charming Mrs. A. or Lady B. for sixpence, a shilling, or may be a florin, according as she is photographed like this, or photographed like that. We don't know what Mr. A. or Lord B. thinks about it, but to our mind the least happy application of photography is certainly to devote it to the depiction of women whose sole object in life is to present themselves to the public as much as possible so as to establish a repu-

tation in society like that enjoyed by Moses and Son among tailors, and Harper Twelvetreces among the manufacturers of subtle compounds for the destruction of domestic insects. Photographers and Society journals must share between them the onus of having invented such a purposeless creature as the professional beauty.

What Leaves to take, and what to leave alone.—We have a suggestion for one of our clever landscape photographers. It is that they should write us a paper on the photographing of foliage, telling us the kind of trees that are the more easy to depict, for foregrounds especially. It is not unfrequently the case that in selecting a foreground for a landscape you have choice of several kinds of foliage, and the difference between a practised hand and a novice is, that the former chooses leaves that he knows to be steady, while the latter hardly gives the subject a second thought. Even if they are in a sheltered position, the leaves of a Lombard poplar are never still; they are balanced upon a slender stalk which does not remain steady for an instant. "Come when the aspens quiver," is scarcely good advice to an outdoor photographer, and yet one sees the depiction of such foliage attempted over and over again. An old hand, however, never does anything of the sort. He chooses a good stout leaf that it takes half a gale to stir. The vine leaf furnishes a capital foreground, and the photographer in South Germany, in Italy, and in the Tyrol can usually secure it in his pictures. We have in our mind's eye at this moment a charming view of Mr. Woodbury's, taken near Menaggio. We look over the placid waters of Como to the soft promontory of Bellagio, and can see the Lake of Lecco beyond as bright and still as a mirror. In the foreground of this composition is a trellised vine, the leaves as sharply depicted as if they were silhouettes cut out in paper. Mr. H. P. Robinson, the other day, told us that the horse-chestnut was one of his favourite models, and those who have studied that accomplished photographer's work will remember that he has frequently limned the chestnut in his pictures. In some of his pictures Mr. Robinson has been able, indeed, to secure a photograph of the under-side of the leaves of his favorite tree, a *tour de force* which is not easily accomplished. The fig tree is another good friend of the photographer, and some of the ivies too; not all, however, for the ivy leaf has frequently a long stalk, and then trembles with the best of them. But a vine of ivy twisted round a bare fence or gate will frequently make all the difference in a picture in which fence and gate are prominent objects. We need not, indeed, dwell upon the charm which foliage imparts to the foreground of a landscape, but the foliage must be well rendered if it is to occupy a prominent place. Steady leaves and spots well sheltered from the wind are essential, while we may also remark that if the photographer pursues his out-door work in early summer, when the leaves are not fully out and firmer on the stem, he will have an easier task. But here we must leave the subject, hoping that a Bedford or England or Manners Gordon will, at some future time, give us a practical paper on foliage that is easy to photograph

FRENCH CORRESPONDENCE.

PHOTOGRAPHIC LITERATURE—REMONSTRANCE OF M. DUCOS DU HAURON—TRIAL OF A PHOTO-ENGRAVING PROCESS IN M. DIDOT'S WORKSHOPS—DEVELOPING SOLUTION FOR AN INSTANTANEOUS PROCESS BY M. DARRICAU—THE FRENCH PRESIDENT AT THE EXHIBITION OF SCIENTIFIC WORKS APPLIED TO MANUFACTURES.

Photographic Literature.—The lecture delivered at the Sorbonne in March last by M. Davanne, on "Photography, its invention and applications," has just been published by the house of Gauthier-Villars. It will be recollected by your readers that I gave an account of this lecture at the time (see PHOTOGRAPHIC NEWS for 10th of April, page 175), and spoke in very high terms both of

the ability of the lecturer and of the manner in which he was received by his audience. I also expressed my vivid satisfaction at seeing the doors of that strictly scientific institution, the Sorbonne, opened to admit a discussion on photography. I recur to the subject on the present occasion for the purpose merely of bringing the publication of the lecture to the notice of readers of photographic literature. Works on photography keep growing in number and importance, though even now a photographic library could be collected of great value and interest. M. Gauthier-Villars has determined to offer every facility for publishing in France all the treatises and books bearing on photography, and thanks, to him, the number of such works is rapidly increasing.

Remonstrance by M. Ducos du Hauron.—I have recently received from M. Ducos du Hauron a letter of which I give the following extract, in order to show the spirit in which he meets my criticisms on his process of heliography in natural colours:—"It is quite certain," he says, "that the three colours, or pigments, whose exact or (what amounts to the same thing in practice) approximate tonality several years of close study and experiment have enabled me to determine, are able actually to represent, by means of their optical superposition, all the hues of nature, infinite though they are supposed to be. Copying the most complicated colouring, or the most gradual and delicate change of tint, costs by my method no more trouble than copying a rough illumination of Epinal. Always three negative plates—not one more nor one less—three negatives taken through three coloured media, invariably the same; afterwards a threefold printing. Such is my method—my immutable method—which can be worked by any of the processes: the gelatine process, that with engraved plates, that with fatty inks, &c. Now is this method not much superior, and has it not a more promising future, both artistic and industrial, than that which, to produce a richly-coloured chromo-lithograph, requires twenty and odd different printings? Can a work of excision and adjustment by bits and pieces, like the fitting together of a mosaic, ever be as valuable as this threefold distribution, and this reconstitution of the constituent elements of colour by the sun itself?" Now all this is said, and very well said, with a conviction which certainly commands respect. I have already shown too much scepticism as to the possibility of practically and artistically obtaining with three colours all the natural shades and tints, to discuss the question again; I propose to abstain from expressing any further doubts on the subject until there are brought forward the convincing proofs which this investigator, as opinionated as he is indefatigable, has promised us. At the meeting of the Photographic Society of France, which takes place on the 9th of next month, M. Ducos du Hauron purposes, as he informs me, to exhibit some new prints taken by his method of *heliographie*, measuring 21 by 27 centim., a much larger size than any that he has previously produced. Their author appears to be quite satisfied with them, but until I have seen them I shall reserve my opinion—an opinion which I shall form without reference to my former criticisms. As far as this method of M. Ducos du Hauron is concerned, just as much as regards any other system or process, I wish it to be known that I always speak quite as I feel, and never under the influence of personal interest. I have only one interest, and that is (no one will censure me for avowing it) the interest of the progress and success of the art of photography in all its forms and all its applications. If I have been led oftener than I could have wished to express doubts as to the value of the process of M. Ducos du Hauron, it is entirely owing to the fact that this process is designated by a title which can scarcely be justified. The name of *Heliographie Naturelle* can only mislead if it be applied to a process which is far from realising the conditions which such a term implies. The correct title for this process would be *Polychromie Photographique*. Let the qualification *Naturelle* be sup-

pressed, and I shall be in a position to follow with interest and sympathy the experiments and work of the inventor of the process, without being compelled to protest, so continually as I have been (in the name of liberty of judgment and by right of my sincere conviction) obliged to do, against what, in my opinion, is the impossibility by this method of reproducing the effects of nature in its most delicate tints, however infinite may be their number. I must entirely disclaim the imputation of having acted as I have done merely in order to offend a respected colleague; on the contrary, I entertain too high an esteem for him to do anything else but manifest the courage of my own opinion. But I promise him to retract anything I may have said, and to confess myself in the wrong, directly that, in spite of my present attitude of scepticism, indisputable proof is given of the truth of the evidence which is claimed as favouring the process, but of which I have hitherto always had grave doubts. I shall then not hesitate a moment in tendering him my sincere apologies, and the praise which, in that case, I shall not be slow in bestowing, will have all the more value from the fact of its having been preceded by strictures frankly expressed, and by criticism the result of conviction. The rôle of a chronicler of events in the photographic world is not the most agreeable to play; if he praises anything, he is accused of advertising the processes or the inventions of A or of B; if he finds fault, then it is said that he is actuated by malice, that he bears an ill-will against C, and is trying to spoil his business and to ruin his prospects. Evidently the best way would be to say nothing, while to do nothing would be the acme of perfection. Now I am well aware of this, and sometimes I am inclined to envy the comfort enjoyed by the man who says and does nothing; but with me, to whom activity is a necessary of life, this feeling of envy does not last long; I get to work again, and console myself with the adage—one which has always inspired my rule of conduct—"Faire bien, et laisser dire."

Photo-engraving Process as used in the Printing Office of M. Didot.—Some time ago I had occasion to mention in the PHOTOGRAPHIC NEWS (see No. 1087, 4th July, page 320) a method devised by M. Petit for producing photo-typographic plates, which has been tried in the workshops of the house of Firmin-Didot. I have just heard that in consequence of the success of the first trials, special machinery has been put up in these shops for working plates of the size 30 by 40 centim. As far as I have been able to learn, this process, whose value can only be proved by time, consists in the production of prints striated in different directions, so as to form hatchings, which can then be transferred to zinc, either for working with fatty ink, or by means of bitumen, when the lines are etched in by the ordinary method. M. Petit proceeds in the following manner:—A gelatine plate, similar to one which is taken by the Woodburytype process, is first obtained from the negative of the object to be copied on the printing block. By means of strong pressure an impression is then taken warm from this gelatine plate in some white plastic material which is capable of hardening as it cools. We have thus a number of depressions in the white material corresponding to the reliefs, more or less pronounced, in the gelatine; we have, in fact, an impression similar to that taken on the leaden plate in the Woodburytype process, but it is in a material of a white colour analogous to a plaster casting, and this, as will be seen, is a most important point in this process. All the surface of the impression is then blackened with graphite, and over it is made to pass the point of a hatching machine, this point being so arranged that when it rises it gives a broader line, and the depth of the cut being limited by the greatest depth of the depression. Now the impression being, as a matter of course, placed in a perfectly horizontal position, it follows that the cuts or hatched lines are more or less wide according as the depressions over which they pass are more or less deep. To the most prominent relief—or, better, to the least marked depressions—

will correspond the most coarse-grained hatchings, and the latter will become finer according as the indentations are deeper. The cuts are all white, and finally we have a drawing of which the shading is formed of white hatchings on a black ground, for all the parts previously coated with plumbago, and not touched by the point, remain black. It will readily be understood that from a drawing of this kind a negative can easily be reproduced in the camera, from which positive prints can then be taken on zinc plates. There can scarcely be a more favourable augury for the future of the applications of photography than to see them promoted in this way by a house so important as that of Firmin Didot. Although I have seen an engraving executed by this process of M. Petit, I can scarcely venture to pronounce an opinion on the probability of its success while the process itself is still in the stage of infancy; when, after being worked on a large scale, its results are before the public, I shall be better able to do so. The idea of these hatched lines is certainly not a new one, but that fact is of no importance provided that the process succeeds in realizing an industrial progress. When the application of a discovery is under consideration, whether the idea which lies at the root of it is new or not is a matter of no moment; what we want to know is, whether it can be successful in practice; the question of priority is rather one of moral and historical interest.

M. Darrieau's Formula for an Instantaneous Process.—One of my esteemed correspondents at Marseilles has sent me—*apropos* of the process of M. Boissonas, as published in the PHOTOGRAPHIC NEWS—the formula for a developing solution by means of which, in his opinion, a picture may be taken with a good light by merely opening and closing the flap of the objective—that is to say, in less than a second.

Distilled water	...	...	100	grammes
Saccharo-sulphate of iron...	12½	"		
Glacial acetic acid...	...	50	drops	

The tone of the negative he describes as being very rich, and similar to that obtained with pyrogallie acid. To this formula M. Darrieau appends one for the preparation of saccharo-sulphate of iron, which is not found in the market:—Dissolve (1) 100 grammes of ferrous sulphate in 100 grammes of boiling distilled water; and (2) 50 grammes of sugar-candy in 30 grammes of boiling distilled water; then mix the two solutions, and in a short time crystals will be deposited. Collect these crystals and put them to dry on a sheet of white blotting-paper, but carefully avoid using the rose or buff-coloured paper; this precaution is essential.

Visit of the President of the French Republic to the Exhibition of Scientific Works applied to Industry.—I should not have referred to this event except to take advantage of it for the purpose of explaining the position which photography occupies at the Exhibition. In my quality of joint commissioner with M. Davanne, I was in attendance on the President of the Republic during his peregrination of all the sections of the Exhibition (which, notwithstanding its name, is rather industrial than scientific in character) on the occasion of his official visit to it on the 22nd August last. The most noticeable circumstance of this ceremony, so far as we were concerned, was that M. Grévy was not conducted to the gallery where the photographs are exhibited, and the reason for this omission is not far to seek. The gallery in question is half empty, and to prevent attention from being drawn to the nakedness of the walls, the Director of the Exhibition avoided bringing his distinguished visitor to see them. For this unfortunate state of things neither the exhibiting photographers, nor the commissioners charged with the organization and arrangement of the photographic section—that is to say, M. Davanne and myself—are responsible. We were allotted only the half of one gallery, and were told that the other half had

been set apart for elementary education. Unfortunately, we soon found that this space, which could not be given up to us, was not likely to be occupied by any one else, and, in fact, it has remained empty up to the present day. The result is most deplorable, and even detrimental to the interests of the Exhibition in the photographic section, for the public, disgusted at the bare condition of the gallery, has no inclination to spend any time in it. Under such circumstances, is it just to upbraid the photographers of France for refusing to exhibit, or to lay blame on those who do exhibit for being so few in number? I cannot admit the justice of such a complaint. We have only just done with the International Exhibition of 1878, and we ought really not to require exhibitors to be so soon ready for another. French photographers responded with remarkable unanimity to the appeal that was addressed to them to exhibit in the building in the Champ de Mars, and scarcely have they left it, scarcely have they removed the dust from their frames and their scutcheons, than they are asked to bring them forth again for a fresh field of competition. Now this is too much to demand of them; they had much better employ their time in improving themselves, in producing new work, in applying new processes, and then, when they do again come forward, they will rest their claim for a higher award on the progress they have made, not on the works which have already been submitted to the judges. What astonishes me—and I do not hesitate to say so—is that so many as thirty or thirty-five exhibitors in the photographic section have been found to respond to the appeal addressed to them by M. Nicole, the able Director of this Exhibition. To the individual labour, one may almost say to the personal initiative, of M. Nicole this very interesting exhibition is due; it is, in fact, for him an industrial enterprise; but this does not in any way detract from the merit of its promoter, nor does it lessen the value of the services which an undertaking of this kind is able to render. LEON VIDAL.

AUTOTYPE.

A RECENT notice in the *Art Journal* of carbon printing contains some interesting remarks. It says:—

"For about ten years, a process of photographic printing called 'autotype' has been growing into notice, and asserting its right to occupy the field of art photography. It not only claims to have solved the problem of rendering the photographic image inalterable, but, by the command of a wide range of monochromic effect, and of different surfaces for the reception of the picture, to have rendered practicable the reproduction of an artist's work in fac-simile. For example, an artist expresses his ideas in charcoal, in crayon, in sepia, or red chalk; the process is able to replicate his work, the same size, or larger, or smaller, employing the pigment of the original and the same kind of paper or foundation. The copy in such case may reasonably be believed to be as permanent as the original. A drawing or other artistic work reproduced by ordinary photographic means is palpably but a photograph; printed in autotype it will be so close a fac-simile of the original as not easily to be distinguished from it.

"The autotype thus claims, under favorable circumstances, to reproduce the very body and soul of an artist's work—his touch and sentiment, with the actual pigment of his palette and the material he works upon. Effecting this by chemical means without the intervention of another hand, the process found a sponsor to name it autotype.

"The starting point of all photographic pictures is the production of a negative in the camera. The negative becomes a matrix of endless prints. Most of our readers are familiar with a negative, and have noticed how the lights and shadows of the image on the glass are reversed; the

high lights of the subject being represented by a dense deposit, while its shadows approach the condition of clear glass. It follows that light will be retarded in its passage through a negative exactly in proportion to the varying density of the image on its surface, and the art of photographic printing consists in providing that the transmitted light shall impinge on a surface sensitive to its impression. This has hitherto been effected by the use of a paper coated with a thin substratum of albumen and rendered sensitive to light by a salt of silver. Photographs so produced are liable to gradual spontaneous decay, and fade away to the pale ghosts of their former selves, and ultimately disappear.

"Autotypy claims permanency for its *raison d'être*. The difference it imparts into photographic printing consists principally in substituting for the fickle salts of silver some permanent pigment as the physical basis of the picture. This substitution not only supplants the evanescent by what is practically inalterable, but endows photographic art with the wide range of monochromic effect. Photography in natural colours is still a dream, but autotypy is able to make some slight advance towards art in this direction. The process is founded on the property of gelatine when combined with a bichromate salt to become insoluble in water, after having been exposed to light. Paper is coated with a film of liquid gelatine containing finely ground colour and sufficient of the bichromate salt to insure chemical action. This sensitive tissue, kept from the light, is perfectly soluble in water; but if light acts upon it, the whole condition is altered: the gelatine becomes insoluble, and firmly imprisons every particle of the colouring matter. It will now be understood that if this sensitive tissue be placed under a negative, and exposed to light, the chemical action exerted upon it will be in proportion to the density of the negative; where much light passes, the tissues will be deeply penetrated, and much colour imprisoned; where the light is partially intercepted less colour will be fixed, and a latent picture will be formed in the tissue in exact gradation, and with the lights and shadows as in nature.

"To make this latent picture visible, it is, in technical language, developed by the action of warm water, washing away such portions of the coloured gelatine film as have not been influenced by light. But effective development is only possible by an ingenious operation known as transfer. The impact of light through the negative on the surface of the tissue has rendered that surface insoluble, and to achieve success, the pictorial film must be attacked at the back, that is, at the surface resting on its paper support. The various methods of effecting this constitute an important part of the autotype patents.

"The sensitive tissue which under the negative becomes fecundated by light is called the 'temporary support,' and the surface of this is made to adhere by pressure to the material on which the picture shall finally remain. This 'permanent support' may be drawing-paper, canvas, panel, ivory, or, in fact, almost any material used by artists. The two adhering supports are immersed in warm water, which softens the gelatine and allows the original paper or temporary support to be peeled off, and thus lays bare to the action of the water all the pigmented gelatine unaffected by the light. Under the solvent action of water, the picture gradually appears, and remains firmly adherent to its support. The lights and shades of this picture are built up by various degrees of thickness in the gelatine and pigment, representing exactly the gradations of density of the original negative, and the consequent modifications of the action of light. The developed pictures, after being immersed in a solution of alum, washed in pure water, and hung up to dry, are trimmed and mounted in the usual way. Such photographic pictures consist of particles of pigment held together by an incredibly thin film of gelatine rendered insoluble by chemical agency."

TRANSFERRING PHOTOGRAPHIC IMAGES.

A CORRESPONDENT of the *English Mechanic* gives the following details of a method of transferring photographs to wood or any other suitable substance.

It is the invention of Herr T. Pixis, of Munich, and has been patented. A phototype plate, representing the picture that is to be transferred, or its negative, is produced: it must be of the same size as the copy is to appear. The printing-ink used in the phototype process, to which any tone of colour may be given, is carefully mixed with a siccativ, Japanese gold size being preferred. The quantity to be taken of this liquid depends on the question whether the picture is to dry rapidly or slowly. As a rule, fifteen to eighteen drops of Japanese gold size to each half cubic inch of printing-ink may be considered adequate for producing that indelibility which must be attained in most cases. The photographic picture, after having been rolled over with this preparation, is transferred upon the material either directly or by means of transfer paper. The transfer upon ebony or upon any other dark material takes place by means of a white colour prepared in the above manner, or of any desired light colour. But the negative required for producing the phototype plate must in this case be converted into a positive, which may be done by the gelatine process. A thin white paper, one side of which has been prepared with an entirely smooth layer of paste and well pulverised chalk, or in some instances only with a thin layer of paste, must, in dry condition, be so placed upon the phototype plate, carefully impregnated with the above ink composition, that its prepared pasted side lies underneath; the paper is then softly pressed with a damp sponge, whereupon the whole is drawn through a press, if possible but a single time. The paper to which the picture has thus completely been transferred is then carefully taken off the plate, and can be immediately transferred on other materials, or it may be kept for the purpose of being transferred at a future time. In order to keep it damp for the latter purpose, it must be placed between damp blotting-paper and hermetically packed up. The object to be printed must be fastened in the press, and the transfer paper, after having been moistened from the reverse, is laid on that part on which the picture is to appear. Some sheets of damp blotting-paper are then placed upon the transfer paper, and the whole, together with the usual cover, is drawn through the press once or several times, according to the object upon which the transfer is being made; this done, the transfer paper is moistened with a sponge dipped in cold water until it can easily be detached from the transferred picture without leaving on it any traces of the printing-ink. In order to render the picture completely clear, the layer of chalk attaching to it directly after the act of printing must be removed by means of a soft sponge which has been wetted in cold water. Boxwood blocks are prepared for the process in the following manner:—A quantity of flake white ground in oil, such as is used by painters, must be mixed with a few drops of Japanese gold size, and as much benzine added as will make it possible to work the whole in the thinnest quantity attainable, and very swiftly, by using a broad brush. When the wood-engraver has finished his task he removes the white with turpentine or spirit. Upon smaller objects, such as medallions in ivory, metal, wood, &c., the transfer, if executed without delay, can be performed directly from the paper by using a smoothing-bone; this fact is important with regard to all such objects as are not quite flat, but somewhat vaulted.

In order to transfer a picture on porcelain, clay, or glass, Herr Pixis takes exclusively enamel colours, and gets them upon the phototype plate by rolling. If the tone of the picture is to be lowered or strengthened, or if a variety in colouring is desired, either the phototype plate, the transfer, or the material, is powdered over with dry colours of the required tint before the enamelling takes place, and while the pictures are still damp. This powdering with dry colours may also be applied to pictures which are to be transferred

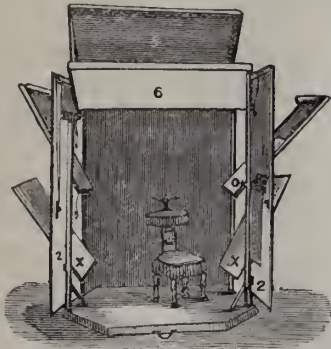
to leather, textile fabrics, metals, wood, minerals, &c. The above-named materials, as likewise painted canvas, wood, metal, &c., may also, after the picture has been passed over, and before the transfer takes place, be prepared in the desired colour by means of oil, distemper, wax, porcelain, and water colours. Every picture, if transferred in the described manner upon wood in several colours or one colour, may, when sufficiently dried, be polished, oiled, and otherwise treated without becoming damaged. Pictures transferred on textile fabrics can be made to stand washing by drawing them, when dry, through a solution of glaire, squeezing and heating them to a temperature of 110-120° C. (230-270° Fahr.)

CONTROLLING LIGHT BY SCREENS.

VARIOUS forms of screens and reflectors have been devised for controlling light. Mr. G. W. Coddington, in our Philadelphia contemporary, gives details of a somewhat elaborate contrivance. He says:—

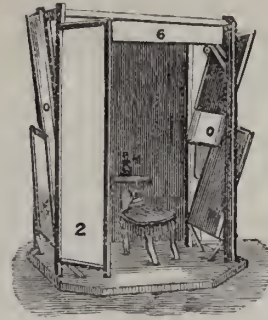
It is only intended for busts and the general figure, although children can easily be taken full-length. Neither is it intended for a small operating-room, for it would only be in the way, and the light in such small rooms can be easily regulated by top and side-screens and blinds. In using the platform I generally let in all the light I can get from the sky and sidelight (but not sunlight), and then regulate the screens, blinds, and reflectors attached to the uprights on the platform, and by moving it to different positions under the skylight, in conjunction with screens, &c., I can get any light I want with very little trouble. Everything is almost under your thumb, and you can keep your eye on your subject all the time while making any necessary changes, and do not have to run all over the room to pull this string or that blind, and by the time you have got back forget or cannot see any change in the effect, without it is outrageous, and very likely just what you do not want; and by the time you have everything to suit, you are all in a "fidget," and your customer, too, for that matter.

The platform, or floor, is made of six-inch fencing-boards, one inch thick, planed off on one side, and are two layers, running crosswise, and nailed firmly together. It is five feet square, with the four corners cut off and set on common bedstead castors three inches from the edge on each side. Near the corner are bored four two-inch holes three feet apart, into which are put four uprights two inches square, with stanchions at the bottom; the uprights are seven feet high, and are framed together at top by pieces seven-eighths by one and a-half inch, to hold all steady; they are also braced at top and bottom, as shown in the figure.



Between the uprights on each side are two movable frames two feet ten inches by two feet three inches long; the four screens or reflectors are inserted between the uprights, and

a two-inch wood screw passes loosely through them six inches from the bottom, and screwed firmly into the upright post. Fifteen inches from the platform is the bottom frame, marked X, and four feet from floor are the two top frames marked O. In front, hung on the face of the first, are two long frames eighteen inches by six feet long, hung on common door-hinges.



The background is five by seven feet, painted as described in *Mosaics* for 1877, page 48; on top is a frame, marked 5, two feet ten inches by four feet six inches, and turned on two screws at the back, the same as side-screens, and acts as a head-screen. This screen is raised or lowered to suit with a notched stick: all the top frames are covered with thin, bleached, yard-wide muslin.

The two bottom side reflectors, which are opaque, and painted a light blue, act as reflectors to light up the shadows under the eyes, nose, chin, &c. On the two, side top and long front screen, marked 2 and O, are four green opaque curtains, that roll up the same as a common window-shade, and can be pulled down to the floor, shutting off all light from the sides. On the back corners of the four re-



flectors, marked O and X, is fastened a small band that passes over a small pulley fastened in the upright post, and at the other end is a small weight to counter-balance the weight of the frame when thrown back, and make it stay in position. In front is also a thin white curtain, marked 6, which can be pulled down three feet, or rolled entirely up. The background sets back one foot from the back part, and is fastened to a two-inch post behind, which fits in a two-inch hole bored in the platform, and turns on a pivot, so that the background can be turned freely around to or from the light, and thereby graduate it more or less, and leave room to go in to arrange the head-rest, &c., which is no small item. All the frames are made of stuff seven-eighths by one and a quarter inch wide; the whole is very light, and can be pushed or pulled about at pleasure.

Here we have a set of frames so arranged that they are reflectors, counter-reflectors, transparencies, or non-reflectors, at will, and all under control, whilst it is easily and cheaply made.

The Photographic News.

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THE BRITISH ASSOCIATION.

THE forty-ninth annual meeting of the British Association for the Advancement of Science has just been held in Sheffield, under the Presidency of Professor Allman. Steadily, year by year, the photographic interest of the meetings has been diminishing, the present meeting furnishing no exception to the general declension which has prevailed for years. Photography has passed out of its infancy, when it absolutely required to be nursed by science, and has become an art industry, of little scientific interest, except in cases where it becomes a handmaid to science, or presents new phenomena for science to solve.

In its general aspects, the meeting has been a successful and interesting one, distinguished in some departments by great ability. Unlike many preceding meetings, it has not been marked by theological antagonisms. The eloquent and profound inaugural address of the President was distinguished by reverential modesty when he approached those limits beyond which biological science cannot pass. An admirable sermon was preached to the Association by the Archbishop of York, himself an ardent scientific student and skilful photographer. The lectures were eloquent and interesting, that by Mr. Crookes, on Radiant Matter, especially so. The after dinner speeches were better than usual.

The first glimpse of photographic interest was displayed in Section A, Mathematical and Physical Science, when Dr. Janssen read a brief paper on the Actinic Distribution of the Solar Spectrum. He alluded to his discovery that the photographic solar spectrum possesses a maximum of intensity like the optical or luminous spectrum. This actinic maximum was near the line G, while the luminous maximum was near D. It occupied sensibly the same position for nearly all photographic substances and for lenses of different material. The time of exposure was graduated from five minutes to a small fraction of a second. By this means results were obtained which practically afforded a chronometric analysis of the spectrum. They had a bearing on the vexed question of solar oxygen, and they led practically to improvements of importance in the construction of photographic apparatus. That visual and actinic intensity are not absolutely coincident was, of course, well known, and the Professor's address, delivered in the French language, naturally did not evoke much controversy. On a subsequent occasion Dr. Janssen gave particulars of his labours at Meudon in the application of photography to the solar system, and submitted, for the inspection of the Section, glasses on which the spots of the sun had been photographed. Regarding some other trifling matters of photographic interest we hope to say something next week.

At the *conversazione* in Cutlers' Hall, amongst the objects of scientific interest exhibited were microscopic photographs by Mr. Bolton, of Birmingham. In a smaller room Mr. Bolton practically explained a new process for copying pen-and-ink writing or drawings. This process has some resemblance to lithographic and chromographic printing. On a slate coated with gelatine, and soaked in bichromate of potash, the writing or sketch is laid, which eats itself into the gelatine through the action of the iron in the ink. From this any number of copies can be made, a fresh supply of ink being alone required for each impression. By a further amplification of the process, photographs can be copied, which, to the naked eye, appear equal to the originals, and are not injured by sunlight.

Professor Ramsay was announced as the President-elect for the the next year, and he is to preside at the meeting at Swansea, which has been fixed for the 25th of August, 1880.

PHOTOGRAPHY IN NATURAL COLOURS.

THE vitality of a fallacy is marvellous. We have just been reading a chapter of photographic history written in the year 1850, in which we find the following statement. "Mr. L. L. Hill, of the State of New York, has announced to the world that he has discovered a method of taking pictures in natural colours with all the perfection of nature herself," and that he would be ready in two months to publish details. The process was, he said, more easy and certain, and the exposure shorter, than in the process of Daguerreotype then in use; and, moreover, there was to be immunity from fading. Nearly thirty years have elapsed, but Mr. Hill's method has never been published. Innumerable similar announcements have since been made, which, like the first, have proved to be fallacies or falsehoods. The interest of the intelligent public in such a thing is, however, still unabated, and we read two paragraphs in some notes on the current progress of science, in an old favourite of the public, and always well informed magazine, *Chambers' Journal*, describing what are regarded as recent steps towards photography in colours. The recent experiments of Captain Abney, described in a paper read before the Royal Society, in obtaining images of the solar spectrum in colours, are mentioned, and also the chromo-photo-collotypes of Herr Albert. The writer in *Chambers* says:—

"It would be a triumph of optics and chemistry if photographs could be made to represent the natural colours of objects. Attempts towards this result have hitherto ended for the most part in disappointment. But Captain Abney, in a short paper 'On the Production of Coloured Spectra by Light,' read before the Royal Society, makes known that he has succeeded in producing approximately in the natural colours, pictures of the solar spectrum on silver plates, and also, but less brilliant, on compounds of silver held in place by collodion. 'I reserve for the present,' he writes, 'the exact details of the production of these pictures, but may say that they are produced by oxidation of silver compounds when placed in the spectrum; an exposure of two minutes being amply sufficient with a wide slit to impress the colours. The colouring matter seems to be due to a mixture of two different sizes of molecules of the same chemical composition, one of which absorbs at the blue end, and the other at the red end of the spectrum, and the sizes of these molecules are unalterable while exposed to the same wave lengths as those by which they were produced.' And he is of opinion that 'the colours may be preserved unchanged when exposed to ordinary daylight.' From this it will be understood that Captain Abney has made a step in advance of high importance."

We should be very sorry indeed to appear to underrate the work of Captain Abney in this direction; but, unless

our memory misleads us, M. Becquerel obtained an image of the solar spectrum in natural colours early in 1849. Niepce Victor and others have since secured still greater results. On a film of sub-chloride we ourselves have obtained very approximate natural colours. But in all these cases the colours were evanescent. Captain Abney is of opinion that his colours will remain unchanged when exposed to ordinary daylight. This is a decided step in advance. Our own results were gradually destroyed by daylight. We shall look for further details of our friend Captain Abney's operations with interest.

The writer in *Chambers'* proceeds to refer to the interesting experiments of Herr Albert in printing coloured photo-collographs, which have, however, no connection with photography in natural colours. He says:—

"In connection with this we mention improvements in colour-printing by which Herr Albert, court photographer at Munich, produces chromo-photographs of surprising excellence. The process commences by the taking of three photographs, each being exposed to the action of different and definite portions of the spectrum. This is effected by causing the light, before it reaches the sensitized plate, to pass through coloured glasses, or suitable coloured liquids, and, moreover, by employing in each case special solutions for the development of each negative. A positive printing plate (a glass plate gelatinized) is then produced for each negative; and, if the absorbing media and the developing preparations have been correctly chosen, it is only necessary to colour one of these plates with red, another with yellow, and the third with blue, in order, by successive printings, to obtain a picture which exhibits more or less resemblance to the original. Success appears to depend on the skill and nicety with which the absorbing materials are employed, for mixtures of colours and of colouring materials are quite different things; and, to quote the technical description, 'for the negative belonging to the blue plate we must employ such absorbing media and preparations as will prevent green from producing any influence on it, and at the same time will render blue and violet quite inactive, inasmuch as these tints must appear only on the positive plate.'

"Specimens of landscapes and of decorative panels printed by Herr Albert's process were exhibited at scientific receptions in London during the past session, and were deservedly admired. The details were shown: a plain yellow picture; then on the yellow a blue, and on the blue a red; and with these three the effect of a well-finished water-colour drawing was produced."

IDENTIFICATION BY PHOTOGRAPHY.

THE passion for justice, which is happily one of the distinguishing characteristics of man in a state of Christian civilization, has led a large number of persons believing in the legitimacy of the claims to the Tichborne baronetcy of the claimant now in Portsea convict prison to devise various methods of proving his identity. Amongst these is a very ingenious application of photography. It appears to be an ascertained fact that however much the general aspect of the human face may change during the years which elapse between early manhood and old age, the bony structure remains unaltered, and is the same at fifty as it was at twenty. This being so, two photographs taken, one at each period, would coalesce in the stereoscope, and in a little instrument invented for such tests, called the *identiscope*. This test has been applied to such photographs of the portraits of the alleged Roger Tichborne as are accessible—the Chili Daguerreotypes and a portrait taken by Messrs. Maull in 1873. The result is very remarkable in its suggestion of identity between the youthful and the matured face. To test this question more fully and with more precision, and to make other tests, a number of the gentlemen to whom we have referred,

forming the "Bristol Tichborne Science Test Committee," have appealed to the Secretary of State for permission to obtain special photographs of the Claimant, and to have copies of the Daguerreotypes now in custody of the High Court of Judicature. As might have been expected, evasion or a civil refusal is the only reply. The things are tied up with red tape, and cannot be easily untied. Moreover, if the enthusiastic gentlemen forming this committee should by chance prove beyond a reasonable doubt that the Claimant was the Baronet, and that there had been a serious miscarriage of justice, think how seriously embarrassing that would be! The Claimant was adjudged to be Orton by the decision of a British jury, and how could they possibly be in error? This is a question, however, with which we, happily, have no concern in these pages. Our aim is simply to record the interesting applications of photography. We make the following extracts from a circular issued, giving the correspondence between the Science Test Committee and the Home Secretary and other authorities:—

"It is alleged by this Committee that by a system of geometric admeasurement of photographs it can be proved that, however much the appearance of a man's face may change, the bony fabrics of the features remain precisely the same at the age of forty or fifty as they were at twenty. The iris of the eye being taken as the factor of admeasurement, and horizontal lines drawn across the face, first through the centre of both eyes and then, above and below, as many lines as there are diameters of the iris, the disparity between different faces is very remarkable, for while, for instance, there are 8 diameters on Prince Leopold, there are 15 on Napoleon III; the one having large eyes and a short face, the other small eyes and long face. It is obvious that the lines on two such faces, or on any two other faces where the least difference in the size of the iris or length of the face is found, would never correspond. An instrument called an 'Identiscope' has been invented; it is like the stiff covers of a book, inside of which are placed two life size photos, having these horizontal lines accurately drawn across them. By means of a sheet of glass forming the single leaf in the book covers, these portraits are reflected one upon the other; if they represent the same person, the lines exactly fall on each other and every feature correctly corresponds; but if the portraits are of different persons they cannot match, as the slightest difference would be at once perceptible. Such a discovery, even apart from the Tichborne case, is invaluable for the detection and identification of criminals and others. By this mode of admeasurement and reflection it is found that the Chili Daguerreotype of young Roger Tichborne, taken in 1854, exactly corresponds in the minutest particulars with the portrait of the Claimant, taken by Messrs. Maull, of Piccadilly, in 1873.

"But this is not all. Photography has brought out a still more marvellous discovery which proves the Claimant's identity beyond all question.

"In early life young Roger Tichborne had certain ornate designs traced upon his face—these very same designs now appear on the face of the Claimant, though probably unknown to and forgotten by him! Little did the artist (doubtless a Roman Catholic lady) imagine, when imprinting on the child face of little Roger Tichborne forty years or more ago, that photography would in 1878-9 develop the work, and infallibly prove that its owner was a prisoner unjustly deprived of his liberty, his property, his title, and his rank, a prisoner in a convict cell, working out a double sentence of penal servitude, the result of a refined rendering of the law, disgraceful to the legal minds who designed and tyrannically enforced it with fines and imprisonment on those who uttered a word of protest, and humbling and disastrous to the nation that permitted it. The real Sir Roger Tichborne was sentenced to seven years' penal servitude for swearing he is not Orton, which no one now believes him to be, and seven more for swearing he was Sir Roger Tichborne, which he certainly is, and both sentences the Home

Secretary now declares he shall fully endure. Such may be his determination, but the nation will have something to say at the next election. Even though our national pride be brought down and Royalty itself be humbled—for unfortunately our Queen (whose ready sympathy we have all admired) has gone beyond the limits of discretion—Justice, more sacred than the claims of party, must be vindicated at any cost. The voice of true Christian patriotism cannot be stifled, even though chaos may ensue."

PRODUCING PHOTO-MECHANICAL PRINTING PLATES.

M. BOIVIN describes a simple method of producing plates for printing after the Woodbury method. It does not seem likely to produce the highest delicacy possible, but is very simple. He first produces a good carbon print, and then hardens the image of gelatine by means of alum or bichloride of mercury, and dries it, when it will be free from dust. Next, he says (we quote his article in the *Moniteur*):—

"When I wish to obtain a photoglyptic mould, I wash the image formed of hollows and reliefs, with soapy water (eau de savon), afterwards I cover it with fine plaster of Paris. The mould, obtained with purity, is dried and stearined, and can in these conditions serve for the printing in coloured gelatine. For obtaining the proof we pour upon the surface of the mould a little of the coloured gelatine, either black or any other colour: we place above it a leaf of ordinary paper, or, which is better, coagulated albumen paper; after, we place upon all a thick glass upon which we put a weight sufficient to insure the adherence. In a little time, when the gelatine has set, we raise the leaf of paper, which carries with it the image which remains adherent; for giving to it more of solidity, and to fix it, we pass it through alum, as we do proofs in carbon, after which we finish as usual. If we desire to obtain a mould in metal, it is very easily done with the metal of Darcet (fusible alloy), which is very fusible."

We may remark here that D'Arcet's fusible metal consists of—

Bismuth	...	...	...	...	8 parts
Lead	...	...	...	...	5 "
Tin	...	...	...	...	3 "

It melts below the heat of boiling water. It may be useful to add here some other forms of fusible metal for the use of the experimentalist in this direction. They possess great advantage in having low melting points. Walker's fusible metal consists of—

Bismuth	...	...	...	...	8 parts
Tin	...	...	...	...	4 "
Lead	...	...	...	...	5 "
Antimony	...	...	...	...	1 part

The metals should be repeatedly melted and poured into drops, until they can be well mixed previous to fusing them together. Onion's:—

Lead	...	...	...	...	3 parts
Tin	...	...	...	...	2 "
Bismuth	...	...	...	...	5 "

Melts at 197° F. If to the latter, after removing it from the fire, one part of warm quicksilver be added, it will remain liquid at 170° F., and become a firm solid only at 140° F. Another—

Bismuth	...	...	...	...	2 parts
Lead	...	...	...	...	5 "
Tin	...	...	...	...	3 "

Melts in boiling water.

Some of these are used to make toy spoons to surprise children by their melting in hot liquors. A little mercury (as in 4) may be added to lower their melting points. D'Arcet's and Walker's are specially adapted for making electrotype moulds, French cliché mounts are generally made with the alloy of Walker. These alloys are also used to form pencils for writing, also as metal baths in the laboratory, or for soft soldering joints. No. 4 is also used for anatomical injections.

Higher temperatures, for metal baths in laboratories, may be obtained by the following mixtures:

1 part tin and 2 parts lead melt at 441.5° F. 1 part tin and 1 part lead melt at 371.7° F. 2 parts tin and 1 part lead melt at 340° F. 63 parts tin and 37 parts lead melt at 314.7° F.

Returning to M. Boivin, he says:—

"We take the mould in plaster after drying. We do not stearine it, but we carry it by a gentle heat in a stove and immediately apply it upon the metal in fusion, as this is practised in the process of moulding employed in galvanoplasty.

"Moulds in metal have over moulds in plaster this advantage, that with them we can print an indefinite number of proofs, without having to fear the least alteration, which is not the case with plaster, which is very fragile.

"It goes without saying that this photoglyptic process, so simple, can as well be employed for the reliefs produced by the aid of the actual carbon process, with sensitizing by the bichromate of potash.

"The important point of departure is having a good proof formed of hollows and ridges, before the moulding: whichever process be employed for obtaining it, we shall attain the same end."

PHOTOGRAPHY AS APPLIED TO THE REPRODUCTION OF PLANS AND DRAWINGS.

BY DAVID TOWNSEND, B.S.*

IRON.—Next in importance to the salts of silver come those of iron, and their reactions furnish us with numerous methods for reproducing drawings. The compounds of iron most used are certain double salts, such as citrate of iron and ammonia, oxalate of iron and potassium, tartrate of iron and ammonium, and, of the single salts, the oxalate and per-chloride. In every case the iron must be in the ferric state, otherwise no reduction will occur, and consequently no picture will be produced. All the processes depend upon the reactions of ferro- and ferri-cyanide of potassium on the salts of iron, as already explained. The only thing we have to consider, then, in choosing a salt for a sensitizer is, which one will be the most sensitive to light, and can be procured cheapest. There are two processes which may be considered as typical, the first being called—

Pellet's Process.—This was invented by H. Pellet, of Paris, and is quite recent. It gives a blue picture on a white ground, the operations being as follows.

The best quality of paper must be used, or the per-chloride of iron which is used to sensitize it will soak through, making very ugly spots on the back when developed. If the paper is not sufficiently glazed, liquid gum or gelatine should be added to the sensitizing bath. I obtained the best results in my experiments by using albumenized paper such as is used in portrait photography. The paper is cut to suit the drawing, which for this process must be on tracing cloth, and is then sensitized by floating it, as before described, on a bath composed of

Perchloride of iron	...	...	10 parts
Water	...	...	100 "
Citric or tartaric acid	...	...	5 "

* Continued from page 387.

The sensitizing must be performed in the dark room, and the solution always excluded from the light. The paper is allowed to remain on the bath for thirty seconds, when it is carefully removed and hung in a warm place to dry. It can then be used immediately, or preserved unchanged in a dark place. The tracing to be copied is placed in a printing frame together with a sensitive sheet of paper, and is then taken into the light. In sunlight, from fifteen to forty seconds will be sufficient to reduce all the iron to the state of proto-chloride, except such parts as are protected by the black lines, which will still remain in the ferric state. If the day be cloudy, from fifteen to twenty minutes will be necessary to complete the reduction. The time of exposure can be determined by a few experiments, as it will vary considerably with the time of year, the light being twice as strong in summer as in winter. When the exposure is complete, the frame is brought back into the dark room and opened, when a faint image will be observed on a deep orange-yellow ground. The paper is now plunged into a bath containing

Yellow prussiate of potash (K_4FeCy_6) 24 parts
Water 100 „

when a blue image will appear on a white or bluish ground, if the development is sufficiently prolonged. The parts protected by the black lines, being still in the ferric state, will be precipitated by the ferrocyanide as prussian blue [$Fe_4(FeCy_6)_3$] while the unprotected parts, being reduced to the ferrous state, will form a white precipitate which absorbs oxygen from the air, and speedily turns blue if not removed. If the exposure has been too short, all the perchloride will not be reduced, and blue spots will appear on the ground; but if too long, the image itself will be somewhat faint, owing to a partial reduction under the lines, and will require an exceedingly long development. When the image is sufficiently developed, the print is removed and washed in an abundance of clean water, to remove the white precipitate, after which it is put for a few minutes in a bath of

Hydrochloric acid 1 part
Water... .. 10 parts

which will deepen the blue picture and whiten the background. After washing for some time, the prints can be dried, and are then finished. This process is hardly applicable on a large scale, as it requires such care and nicety of execution to attain desirable results that it could not be trusted to any but experienced hands. If the paper, after exposure, had been put in a bath of

Red prussiate of potash ($K_6Fe_2Cy_{12}$)... 25 parts
Water 100 „

a reversed picture would have been obtained, having white lines on a blue ground, owing to the fact that the unprotected parts, being reduced to the ferrous state, would be precipitated by the ferricyanide as Turnbull's blue ($Fe_3Fe_2Cy_{12}$), while the protected lines would remain unchanged, so that when washed in water the perchloride would be dissolved, giving white lines on a blue ground, which would be further intensified by the acid bath. The name of cyanotype was given to the latter process by its discoverer, Sir John Herschel. He also developed on a dilute neutral solution of gold tri-chloride, getting a purple picture, to which he gave the name of chrysotype. Any other persalt of iron could be used as a sensitizer, and developed on the ferrocyanide bath with the same result.

Blue Process.—The process which is most used in America, and which has been largely adopted by our manufacturers, is known as the blue process. The drawings are reproduced in white lines on a blue ground, and I understand the paper is sold in the market already sensitized, although it can be prepared cheaper and just as well as the

bought article. Almost any heavy well-glazed printing paper will answer the purpose, but, as this is the only expense, a good quality should be used. The sensitizing bath consists of

a.—Citrate of iron and ammonia ... 1 part
Clear water 4 parts
b.—Red prussiate of potash ... 1 part
Water 6 parts

The two solutions are dissolved separately, and preferably at the ordinary temperature; when in complete solution they are mixed, and kept in a yellow bottle, or carefully excluded from the light, which would cause a blue precipitate. If the paper is not sufficiently sized, gum or gelatine should be added to give it body and prevent the liquid from soaking through. The sensitizing is performed as follows, in non-actinic light:—The sheet of paper, cut to the required size, is pinned to a clean board; some of the solution is poured into a vessel, and the paper painted with it by means of a soft camel's hair brush three inches wide. The brush is dipped into the solution, and the paper completely moistened in one direction; then, without removing the liquid, it is smoothed until no streaks or lines appear. Some prefer to use a sponge, but this causes uneven spots, and mars the beauty of the picture. In this way a very little solution will cover quite a large surface. Before putting the brush away it must be carefully cleaned. The paper is unpinned, hung upon a line, and when dry will keep a long time in the dark. It should be a brass-yellow colour when rightly prepared. To make a copy, the drawing, on tracing cloth, is put into the printing frame, as usual, with a sensitive sheet, and exposed to sunlight for six to ten minutes, or to diffused light for one to two hours. The double salt is reduced to the ferrous state where the light strikes it, and immediately combines with the red prussiate present, to form Turnbull's blue, while the protected parts remain unchanged. The exposure should be continued, until, on opening the frame, the white lines have almost disappeared and the background is greyish-green.

The sheet may also be exposed on a board padded with flannel, over which is placed a sheet of plate glass, but this requires to be always horizontal, and needs more apparatus than it would cost to get a regular frame. When exposure is finished the print is removed, and put immediately into a tank of running water, when the lines will become white (unless over-exposed or not in contact), while the ground becomes dark blue. After sufficient washing, the ground can be improved by transferring to a bath of

Hydrochloric acid 5 parts
Water 100 parts

when it must be again thoroughly washed, and then dried. The colour always darkens on drying, and prints that would otherwise be under-exposed have very beautiful light blue ground.

This process has become the favorite one, owing to its great simplicity, and the ease with which any one can work it; the objections to it are, the length of exposure, especially on cloudy days, and the impossibility of copying drawings from anything but tracing cloth or paper. In very large sheets the fine lines are apt to be reduced, thus making the picture somewhat uncertain in parts. If, instead of mixing the solution, the paper had been sensitized with the citrate bath and then exposed, the reduction would have been very rapid (fifteen or thirty seconds), as this is the most sensitive salt of iron. The picture could then be developed in the ferricyanide bath, and finished as described; but in this case it is better to sacrifice sensitiveness to convenience. The other double salts could be used to replace the citrate, but they require a longer exposure.

Correspondence.

PERMANENCE OF GELATINE NEGATIVES.

A SUGGESTION.

DEAR SIR,—Now that the permanency of gelatine negatives is justly doubted, would it not be worth while for some one of leisure to experiment with bichromate of potash? Say, after fixing the negative, soak in a weak solution of bichromate, and expose to sunlight if possible, so as to convert the film into an insoluble varnish. Alum is of little use, except to prevent frilling, as the film will swell when damp, even after long soaking in it.

A. E. BANNISTER.

Bernard Street, Southampton.

COPYRIGHT AND CHEAP COPYING COMPANIES.

DEAR SIR,—If I read the new Copyright Act and your article on it correctly, photographers will not in future be robbed of their orders for reprints by those generous patrons who get a few cartes taken at some good studio, and then send one to some (so-called) photographic company to have it copied (I had almost written caricatured) at 2s. 8d. per dozen, which will be to most artists a source of congratulation.

By-the-bye. If the News was in less able hands, one might be tempted to remind your "Gup" correspondent that gossip, scandal, and slander often reside in the same street, and in these days of "terraces" one is often mistaken for the other, until unpleasantly reminded of the error.

"Gup," or gossip, is generally unwholesome, almost always personal, and sure to give offence to somebody sooner or later; and in a somewhat large experience I never yet remember any periodical being increased in value by devoting a column to it. However, I have no doubt the Editor of the NEWS will take good care (both for his own sake and his readers') to draw the line at the right place.—Yours truly,

F. A. BRIDGE.

Dalston, August 27.

EMPLOYERS AND EMPLOYED.

SIR,—“Mass,” in his letter of August 1st, mentions an employer in Bath who had him in the same way as the Exeter man had Mr. Bradforde. I am sorry to say I have fallen into hands similar to those described by both. At a moment's notice this man (no photographer himself) has turned me out after bearing patiently his abuse for over twelve months, his only excuse being that I had been with him too long. I have now determined to follow Mr. George Bradforde's example in joining the Photographers' Benevolent Society, and trust my fellow-workmen will do likewise; they will then be protected from such fellows as the above-mentioned employers, and get situations in good places of business where they will be treated well, not as I have been, by a man who hasn't a soul above toys.—I am, &c.,

QUICK SILVER.

Proceedings of Societies.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

At the last meeting, President NEWTON in the chair, the minutes of last meeting were read by the SECRETARY and approved.

Mr. THOMAS exhibited to the Section a large number of prints by Mr. Willis's permanent platinum process, as purchased by the British Government for the Home and Foreign Offices. The life-size pictures were printed in sixteen or twenty minutes, and their price is about \$3 25c. each. They are all

made from small negatives by both direct and reflecting cameras. There is no special paper necessary for the process. The image can be seen during the printing, so that there is no danger of being unable to control the exposure. The process takes about one-third of the exposure of the silver process. The picture is so permanent in the paper that it is not destroyed or faded by any chemical action which will not injure the paper or platinum, like hot aqua regia.

Mr. MASON. The pictures exhibited by Mr. Thomas are certainly very remarkable ones, and are of a class in which we have very few exhibits. I don't remember more than two or three occasions in the last ten years on which we have had solar prints exhibited. I suppose one reason has been that the ordinary solar work has certain imperfections which we don't see in this, viz., that the paper is not as white, and that the delicacy of light and shade in the negative is not represented in print as it is in these. In this life-size picture of a gentleman, the texture of the lace and around the neck is preserved in a way I never saw before on a large print; it lacks that muddy appearance which we usually find. From the process used, we have every reason to believe it is better than the silver in many respects, and, as Mr. Thomas says he can print them faster, and as the expense is about the same as for silver, it shows an advance in that class of work.

Dr. VANDERWEYDE asked if platinum salt had been used in the collodion process. It is more sensitive than silver.

Mr. THOMAS. The platinum in this process plays no part at all in sensitiveness. The picture is printed in iron. The platinum lies by the side of the iron, and has no connection with it. The platinum is in solution on the paper with the iron salt, and where that ferric oxalate is exposed to light it turns to a ferrous oxalate, and the moment the ferrous oxalate is brought into contact with oxalate of potash, the platinum is precipitated in a metallic state. It only precipitates wherever the iron salt is turned into the ferrous oxalate by the action of light.

Dr. VANDERWEYDE. The silver salt in paper is essentially the same as we use it in collodion. It is the reduction of the silver which makes the picture. My question is, whether the platinum will do in the place of silver?

Mr. THOMAS. These prints do not require half the work in finishing that silver prints do. The deep shadows are not clogged up at all.

Mr. CHAPMAN. It seems to me that instead of putting platinum salts into collodion, gelatine would be better. I don't now really recall to mind any method by which iron can be kept in a solution which will dissolve gun-cotton. Here the iron has to be kept in solution, and the platinum in solution, and they are both in the same vehicle—that is, in the paper—and they do not act upon each other at all until after the exposure to light. The iron is turned into ferrous oxalate; then the development is done with the oxalate of potash. The oxalate of potash then connects these two and precipitates the platinum. These two salts might be kept, perhaps, in a film of gelatine.

Dr. VANDERWEYDE. The suggestion is to use the platinum like one does the silver.

Mr. CHAPMAN. The iron in this case must be converted into a ferrous oxalate, or it will not precipitate the platinum. Iodides and bromides of platinum have been tried instead of silver, but they are not as sensitive by any means as silver. It is necessary to have the iron there present, so that the light may act upon it and convert it into a ferrous oxalate from a ferric. Then the two are lying side by side, but not united until the potash comes and unites the two and precipitates the platinum as a metal.

Mr. NEWTON. The trouble in working the collodion would be to get the ferrous oxalate in solution. It is not soluble in water; it is soluble in a solution of oxalate of potash. You could not dissolve iron in ether or alcohol. The ferrous oxalate is not soluble in water, and it would not be in a solution of gelatine and water, or albumen.

Mr. ROCHE exhibited to the Section some printing on wood blocks for engravers, and stated that he had published the process in *Anthony's Bulletin* as early as 1873 or 1874. He also exhibited an ordinary box-wood block having upon it a photograph from which prints in ink were taken without having been engraved.

Dr. VANDERWEYDE, referring to Mr. Chapman's remarks at the last meeting about the different coloured glasses used in his spectrum examination, said that he found the aniline colours to be most perfect, and stated the result of his experiments

with aniline and other colours in the spectrum investigations made by him.

Mr. MASON asked whether his experiments with aniline colours had been of a nature which admitted of his stating that he considered any of them permanent.

Dr. VANDERWEYDE. They keep very well; better than permanganate of potash. The least organic matter in the water used in the experiments will change the tint; but aniline colours as a whole, I find, keep very well. We all know that aniline colours in dyeing are permanent, if used with the proper mordant.

Mr. NEWTON. The red and the orange are very permanent, but it makes a difference with many colours what vehicle is used to carry them; indigo in oil is not permanent, whereas in water it is considered a permanent colour. Aniline has been incorporated with collodion as a vehicle, and I have some of it that has been in my dark-room window for six years, not exposed, however, to direct sunlight. I have not observed that it has changed. This collodion was brought from Bahia, South America. I therefore consider this orange and scarlet aniline incorporated with collodion as permanent.

Mr. ROCHE exhibited to the Section the lantern furnished by the Messrs. Anthony, and a discussion on lanterns followed, after which the proceedings terminated.

Talk in the Studio.

BLISTERS.—A correspondent of *Anthony's Bulletin* writes:—"It seems to me that the use of muriatic acid upon the back of albumen paper has advantages which, if once tried, would never be omitted. The prints are certainly more brilliant, print quicker, and the tones are better, whilst blisters are unknown. My plan, which I think is new, is to first silver the paper, drawing the same over a glass rod to take off the excess of silver, and prevent any drip; then, while still wet, to immediately float the back of the paper on the acid bath of the strength you advise, namely, one hundred ounces of water to one ounce of acid. All that is required is to be careful not to let the solution run over on the silver side. I prepare whole sheets, and have no trouble."

PHOTOGRAPHIC PATTERNS.—"One of the silk manufacturing firms of Lyons, France," says the *Scientific American*, "are introducing the production of photographic impressions on stuffs. They sent to a recent meeting of the Photographic Society several pieces of silk with a variety of photographic pictures printed thereon, including, among others, a number of large medallions representing pictures of the old masters. The length of the specimens thus exhibited is stated as being no less than 131 feet. The process by which they are produced is not given, but it is believed, says the *Commercial Bulletin*, that the prints are made with salts of silver."

CARBON PHOTO PRINTING.—The same journal informs its readers that "Mr. F. Gutekunst, 712, Arch Street, Philadelphia, has organized a complete establishment for the printing of photographs by the carbon process, that is, in printer's ink that never fades. We have received some specimens of the work done, which are unsurpassed for excellence, and reflect credit on the printer. For book illustration and portraiture, this method of printing yields the finest results."

TO KEEP A PLATE WITHOUT STAINS DURING A LONG EXPOSURE.—Every photographer is familiar with the risks of stains from partial drying of the plate when a long time elapses between exciting and developing the plate. Here is a method whose extreme simplicity will entitle it at least to a trial, and one trial will prove its utility. The plan is simply to flood the plate with a few drachms of distilled water previous to exposure; the water is then poured from the plate to a developing-glass, and must on no account be thrown away, for in this appears to lie the secret of success. After exposure the plate is again flooded with the same water that was previously used, and which, after thoroughly moistening the film, is again returned to the developing-glass, and mixed with the required quantity of developer, and the development proceeded with as usual. Plates so treated will give pictures as clear and free from markings as if only exposed in the camera for a few seconds.

HOW TO SUN A BATH.—The following method is far better than the old way of sunning in a clear glass bottle, as it saves much time. Having neutralized the bath with carbonate of soda, or otherwise, place it in a large, flat, white porcelain dish. After a few hours a black scum will appear on the surface; this is removed by means of strips of blotting-paper, and the light is once more free to act on the solution in an unobstructed manner. The bath should be skimmed every few hours until it is found to remain permanently clear, or nearly so, when it is ready to be filtered and to have its strength diluted by the addition of water, for, as will readily be perceived, an exposure in a flat dish, such as that to which the bath has been subjected, necessarily causes a considerable quantity of the water to evaporate, carrying with it much of the ether and alcohol. After being diluted to the proper degree of strength the bath is filtered, and acidified, if necessary, when it will be found to work as well as ever it did, free from streaks, stains, and pinholes.

PHOTOGRAPHIC TRANSIT MEASUREMENTS.—M. Cornu has been investigating the best theoretical conditions for measuring the photographs of the transit of Venus, with especial reference to the micrometric determination of angular distances. From Mouchez's photographs he deduces a value, for the sum of the radii of the sun and Venus, which differs from the value in the *Connaissance des Temps* by less than $\frac{1}{2}$ of 1 per cent. This indicates a possibility of determining the sun's distance, by photographic observations, within $\frac{1}{10}$ of 1 per cent., or within less than 100,000 miles.—*Comptes Rendus*.

DISADVANTAGES OF PHOTOGRAPHY.—"A friend of mine," says a writer in *Truth*, "who has just returned from Egypt, tells me that the doukey-boys of Cairo call their quadrupeds by the names not only of our eminent men, but of the fashionable beauties whose photographs adorn our shop-windows. He successively gave a trial to Mrs. Langtry, Lady Lonsdale, Mrs. Wheeler, and Mrs. Coruwallis West. The first he found very lazy, the second had a disagreeable habit of rolling in the sand, the third walked well, but trotted unevenly, whilst the fourth was skittish, and threw her head up in the air in a jerky manner. Then he hired Sir Stafford Northcote; but this beast, although sure-footed, was slow in his movements; and, after riding several other of our statesmen, he fell back upon the Bishop of London, whom he describes as a very serviceable jackass. But my friend, who is a very fervent member of the Church of England, was much pained by the boy to whom the Bishop belonged frequently beating him with a heavy stick and continuously addressing him as a 'deevil.'"

PHOTOGRAPHIC ILLUSTRATION OF MENTAL OPERATIONS.—In one of the excellent series of "Men of Letters," published by Macmillan and Co., Professor Huxley illustrates his argument respecting complex impressions which are more or less different from each other by reference to composite portraiture, thus:—"This mental operation may be rendered comprehensible by considering what takes place in the formation of compound photographs—when the images of the faces of six sitters, for example, are each received on the same photographic plate for one-sixth the time requisite to take one portrait. The final result is that all those points in which the six faces agree are brought out strongly, while all those in which they differ are left vague; and thus what may be termed a generic portrait of the six, in contradistinction to the specific portrait of anyone, is produced."

TWO NEW METALS.—A correspondent writes:—"The discovery of two new metals is announced, named Samarium and Norwegium. Paradoxical as it may sound to speak of the finding and christening of a hitherto unknown metal before it has been either seen or handled, yet such is the case with Samarium. As happened in the instance of the metal gallium, it has first become known to science by means of the spectrum analysis alone; nor can it be doubted that in the verification of its existence by the senses it will in due time follow the same precedent. It is well known that by means of the characteristic rays which are seen in the luminous spectrum produced by the combustion of any substance, it is possible to single out the known or unknown bodies which enter into the combination. As are the rays, such are the elements producing them. When rays are found answering to no substance already catalogued, the existence of some new body is naturally inferred from the fact. That was how gallium was first brought to light, and now we have a like history for Samarium. M. Lecq de

Boisbaudran, who has greatly distinguished himself by his researches in this branch of science, found, as he was examining a mineral known under the name of Samarkito, an emission of unfamiliar rays. He has inferred thence the existence in this mineral of a new metal which he has accordingly named Samarium, and all he has now to do is to isolate it from the other elements with which it is as yet combined. This has already been done for the other new metal, Norwegium, patriotically so named after his fatherland by its discoverer, Professor Tellef-Dahll, of the University of Norway, who detected it in a metallic compound of arsenic and nickel. The Professor has even determined the principal properties of his new metal, which he describes as being white, slightly malleable, of about the hardness of copper, and fusible at a dull red heat. Its density is represented by 9.44, and its chemical equivalent is 145."—*Times*.

HOW TO PRINT SEVERAL COPIES OF A LETTER.—A new process, by M. Chardon, is as follows: Make a zinc tray about a quarter of an inch in depth, and pour into it a warm solution made as follows:—

Water	...	...	...	4 ounces
Sulphate of baryta	...	...	...	2½ "
Sugar	...	...	...	1 ounce
Gelatine	...	...	...	1 "
Glycerine	...	...	...	6 ounces

Write whatever is required to be printed upon a sheet of white paper, using instead of ordinary ink the aniline colour known as "violet of methylaniline;" as soon as the writing is pretty dry, lay it upon the gelatine surface with the palm of the hand. The ink will be absorbed by the gelatinous product. All that is to be done in order to obtain a fac-simile of the writing is to lay a sheet of paper upon the writing on the gelatine and rub the back with the hand. From forty to fifty can thus be drawn off in a few minutes. We find that in warm weather plates thus prepared remain too soft and adhesive to work satisfactorily. Better results are obtained when a larger proportion of barium sulphate—say 3½ instead of 2½ ounces—are used, and the mixture is heated for an hour on the water-bath.—*Scientific American*.

To Correspondents.

GUPPY.—The simplest remedy for the sensitized paper discolouring is to keep it, after silvering, between sheets of blotting-paper which have been soaked in a solution of carbonate of soda. Some samples of albumenized paper are more liable to discolour than others, but this treatment will prove a remedy in all cases. 2. One cause of the weakness in the print enclosed is the quality of the negative, which lacks intensity to some extent, and hence does not permit of sufficiently deep printing, which is necessary to secure rich tones, whether warm or neutral. If you plunge the prints into the toning bath with little or no washing after leaving the printing-frame, you will get better results with the paper on which enclosed print is printed. 3. There is no safe local remedy for perspiring hands. Constitutional treatment under direction of a medical man may effect a cure; but any attempt at suppression by local treatment, such as the use of a solution of alum or tannin, may produce serious mischief. Frequent washing and plunging in cold water may be useful. 4. We presume that you refer to the mode of estimating the amount of silver in a solution by a standard solution of chloride of sodium. Dissolve 8½ grains of this salt (pure) in 6 ounces of distilled water. Of this solution, 2 drachms will precipitate a grain of nitrate of silver, so that the strength of a solution is easily tested.

TYRO.—A good half-plate lens will probably answer your purpose very well. It will not necessarily fit any camera; that will be governed by the solar focus of the lens. Its shortest focus will probably not be less than six or seven inches, in which case the camera must admit of being closed up to that length between the lens and ground glass. A half-plate lens is supposed to take pictures 6½ inches by 4½ inches. A camera from the establishment you name will doubtless answer. A camera simply means the camera without lens. You will find in the catalogue of the establishment you name cameras of good quality at a reasonable price.

POOR PERPLEXED PRINTER.—We gave all the details we received, and as the plan was empirical rather than theoretical, we could only guess, or test by experiment, for anything further. We should think the bath would be kept up by adding to it fresh solution made as at first.

C. W. FOLKARD.—Anthony's soluble cotton is, we believe, supplied by Mr. Atkinson, of Manchester Street, Liverpool. Incidental examinations of the kind have been made, but nothing exhaustive or systematic.

A. W. T.—Full detail, of service for working, would require more space than this column will afford; but we will, in our next, devote a column to the subject. In the meantime we may give you a tough formula. Dissolve in 1 ounce of plain collodion, of not too rough a texture, 2 grains of chloride of calcium and 2 grains of citric acid. In another ounce of plain collodion dissolve 10 grains of nitrate of silver, and mix the two lots of collodion. Coat paper or glass, and proceed as with albumenized paper printing.

W. W.—We have not tried gelatine as a substratum in such case, not having had occasion for a substratum at all. We could only ascertain, therefore, by experiment. 2. Under the circumstances you name there can be no impropriety in keeping the prints face upwards. 3. We do not see any method of obtaining the plates in question, unless they are introduced into the English market. We see no difficulty in preparing such plates, using the collodion-chloride process, but substituting gelatine for collodion. We used such a process many years ago. 4. Gelatine has been frequently used as a preliminary coating in wet and dry plate work, and many photographers prefer it. If used, the addition of a trace of carbolic acid would probably be an advantage. India-rubber has been found a good substratum. About a one-grain solution is used.

ERNEST KAVANAGH.—A saturated solution of any body is a solution containing as much of the solid substance as it will dissolve. The way to make a saturated solution of anything varies with the substance and its solvent, and also the temperature. Most salts are readily soluble in water. Resins and fatty bodies are only soluble in alcohol or benzole, or other hydrocarbons. Some substances are only soluble by the aid of other bodies like alkalis, or, indeed, of neutral salts. Bichloride of mercury is, for instance, sparingly soluble in water, but much more readily soluble if chloride of ammonia is added to the water. Most substances are more easily soluble in powder or crushed up, and many are made more soluble by the aid of heat. A good plan to make a saturated solution of many bodies consists in powdering them in a mortar and adding hot water. The solution when cold will deposit the excess dissolved when hot, and the clear liquid will be a saturated solution.

J. C. BURNOW.—We doubt very much whether a broken ebonite tray would be of any value for working up again. Our impression is that the india-rubber is vulcanized or ebonized whilst in a plastic state, and moulded to form, and, once hardened, is not easily softened again. Silver and Co., of Bishopsgate Street, are manufacturers. Hyposulphite of soda is better not kept in a state of solution. It is wise to keep the scales in good order.

B. B.—We do not know any better than the Autotype Company, Rathbone Place. We do not know of any one in the City.

W. J. BYRNE.—We regret that we have no information about the Australian Exhibition, except what we have occasionally seen in the public prints, none of the official documents having been sent to us.

JOHN B. CROMOND.—How far ferrotypes may be successfully produced by gas-light is a matter for experiment; but we see no reason to doubt the success. Negatives on gelatine plates have been successfully produced by that light by Mr. Laws.

P. FINCHAM.—The registrations announced in our columns are simply those effected by our publisher, and serve as acknowledgments that the work is done. We make no record of registrations generally.

ENQUIRER.—We hear best accounts of No. 2; also of No. 7.

REFINER.—It would be impossible to give you efficient instructions in this column. You will find valuable articles with full information in our YEAR-BOOKS. 2. Use a warm solution of carbonate of soda.

J. J. A.—If we were in the same position, we should take those plates with which we had already succeeded. Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

- Mr. A. H. HILL, Prestwood,
Five Photographs of Prestwood Hall.
Messrs. T. & J. HOLROYD, Harrogate,
Photograph of Stanton, the Canadian Sculler.
Mr. F. W. BROMHEAD, Leicester,
Photograph of Dr. Webb, Bishop of Blomfontaine.
Mr. A. J. FISHER, Bristol,
Photograph of Miss Lottie Kenno.
Mr. THOMAS BIRTLES, Northwich,
Two Photographs of Lockey's Patent Salt Making Machine.
Mr. J. WATTON,
Photograph of Robin Lyth's Cave, from a painting by Joseph Walton.
Photograph of Church Cave, by Joseph Walton.

The Photographic News, September 5, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHERS WHO DON'T KNOW THEIR OWN BUSINESS— THREE ACIDS IN THE MANUFACTURE OF PYROXYLINE.

Photographers who don't know their own Business.—Some years ago there appeared in these columns a description of several well-known photographic establishments under the name, if we remember rightly, of "Famous Studios." Ever since that time—it may be ten or fifteen years for aught we know—a strong feeling has been in our breast to write a few chapters on infamous studios. We have not abandoned the idea even now, and one of these days—it is well to do nothing rash—the long-thought-about subject may get into the print. It is not on this matter that we are going to chat just now, at any rate, so we shall for the nonce avoid entering into a discussion upon the advantages and disadvantages of employing the fingers in place of a dipper in the plate bath, and resist the temptation of combating upon theoretical grounds the practice of wiring on the collodion film to the glass to prevent it slipping. What we propose to deal with are other shortcomings in studios that have come under personal observation, and seem to merit criticism from an outsider's point of view. We know not if the shortcomings we mention are at all widespread, but as the experience we speak of is confined to three studios only, which we have visited as bona fide customers during the past twelvemonth, it may be that our outcry is only another instance of much ado about nothing. To unburden ourselves, then, of one impression that struck us with some force when we accompanied a lady six weeks ago to make an engagement at a studio. The lady in question was no longer in the heyday of her youth, we will at once admit, but that is all the more reason why our friend the photographer should have been more circumspect. "No, you will look best taken in Rembrandt style, you will, indeed; allow me to judge, please; you will prefer it to any other, I am sure." And, to do the photographer justice, he did in the end produce a remarkably pleasing likeness with Rembrandt lighting, only he need not have been in such a hurry to propose that particular style. It was as if he had in view the lady's years, and thought that lighting the model from behind would be so much more preferable to lighting it from the front. At least, so it occurred to our companion and to ourselves; and if this was not the drift of the photographer's eager remarks, I would point out that sitters are sensitive, and a little too ready to take offence where no offence is meant. There is a popular operetta of Arthur Sullivan's called *Trial by Jury*, that is very generally known, and in one of the songs is a description of a somewhat aged young lady, of whom it is said:

"You really might take her for 43
In the dusk, with the light behind her."

These lines struck us very forcibly when it was proposed to take our lady companion "with the light behind her," and that is why we have written down the incident here. Another shortcoming we remarked in the studio was the dressing room; this time we were accompanied by two children, and being only children, it was supposed that anything like a retiring room was unnecessary. At least, it was only after a special request that we were admitted in that sanctum. The room in question was most inadequately appointed. At first sight its grandeur was most overpowering; there was a mahogany toilet table, and a magnificent mirror, but somehow it seemed to contain just the things that were not wanted, and lacked those which were necessary. But the most striking shortcoming of all was the want of business habits in two of the studios we visited. In one case our money was refused when we desired to pay on making an appointment, and in the other an elaborate receipt was given, but the portraits

themselves were afterwards forthcoming only in dribblets, and then as the result of repeated applications. Do photographers, as a rule, keep books, we should like to know, and do they carry on business as business men should? We ourselves were once seriously thinking about embarking in a photographic enterprise; it was after a visit paid some ten years ago to M. Reutlinger's famous studio in Paris. There was a little recess or bureau leading out of the reception room, and while we were looking at specimens, there was a constant flow of visitors into this little sanctum. They staid but a short time; each put down one or more gold pieces, received a ticket in exchange, and went their way. It was very pleasant to see this. Matters were arranged as quickly and deftly as at the box-office of a theatre, and money rattled in almost as quickly. The scene had an inexpressible charm to us, we remember, and thus it was that the thought occurred to us of embarking upon a similar calling. In the studio, as we afterwards saw—a small strip of a studio at the top of one of the big houses on the Boulevards—matters were managed quite as orderly; and as the sitters one after the other kept their appointments and departments, an accurate entry was made of details, and the date specified on which their order would be finally executed. No wonder M. Reutlinger, with good photography and good business habits combined, managed to thrive so well, and no wonder, too, that photographers who have no idea what system and punctuality mean, are perfectly incompetent to conduct a business and make both ends meet. "You pay afterwards when your portrait has been taken," said a young lady to us the other day, returning our sovereign. "Pay afterwards?" was our exclamation. "Yes sir, that is our system," said the young lady precisely. "Well, our name is Driveller, and you may give Mr. Kammerer my compliments and tell him his system is a very bad one." How can an intending sitter have any respect for an establishment in these circumstances? We felt inclined to walk about and whistle, take up the specimen cases and laugh at every pose we saw. The work lost every bit of its value in our eyes, and we fingered the elegant porcelain cups, with their pretty portraits, with as much veneration as if they had been mugs "For a good Boy" at a fancy bazaar. If a photographer wishes to impress the public with a sense of his proper importance, he must never fail to make prepayment compulsory.

Three Acids in the Manufacture of Pyroxyline.—Some experiments are being made in this country with pyroxyline prepared by the action of three acids: hydrochloric, nitric, and sulphuric. Aimé Girard, we believe, has already manufactured gun-cotton in this way for some time past, and has made a thorough investigation of the products. Of course there is no novelty in acting upon cotton or cellulose with hydrochloric acid. Chemists resort to the operation frequently for the purpose of securing pure cellulose. The cotton acted upon by hydrochloric acid is rendered into a fine state of division, and most of its impurities are thereby removed. But it is contended now that this hydrochlorised cellulose is something more than cellulose in a pure condition, and that when subsequently treated with nitric and sulphuric acid to turn it into nitro-cellulose or gun-cotton, it has different qualities to those possessed by pyroxyline as ordinarily manufactured. How far this is correct, and how far it will affect photographic gun-cotton, are matters which chemists must determine for us.

FRENCH CORRESPONDENCE.

THE MONUMENT OF DAGUERRE AT CORNEILLES-EN-PARISIS —A MAGISTRATE'S OPINION OF THE INTELLIGENCE OF PHOTOGRAPHERS.

The Monument of Daguerre at Cornailles-en-Parisis.—The project to erect a monument in memory of Daguerre has made considerable way of late, and as the question has

now entered on a practical phase, we may assume that it is definitely settled. As I have already informed the readers of the PHOTOGRAPHIC NEWS (see number for 13th of June, page 284), in consequence of the attack on the memory of Daguerre made by the committee appointed to raise a subscription for a memorial of Nicéphore Niepce at Châlons-sur-Saône, the members of the Photographic Union of France determined to apply to the municipality of Daguerre's birthplace. The object of this application was to induce the municipal authorities of Cormeilles-en-Parisis (the place in question) to resent the indignity sought to be inflicted on the reputation of their illustrious fellow-townsmen, by taking the initiative in a movement in favour of a monument commemorative of Daguerre, to which honour he is quite as much entitled as Nicéphore Niepce. The Mayor of Cormeilles-en-Parisis, replying to the application of the Photographic Union of France, requested the members to appoint delegates who should represent the Union at the next meeting of the Municipal Council. In accordance with this request, M. Collard, the president, and M. K. Versnaeyen, the secretary of the *Union Photographique de France*, together with M. Glaise, secretary of the *Société des Archives Photographiques, Historiques, et Monumentales*, were so nominated, and after having met to take up their credentials, these gentlemen presented themselves at the last meeting of the municipal council of Cormeilles-en-Parisis. On that occasion they described the course that had been adopted; they maintained the incontestable right of Daguerre to a public monument, and explained how history had been twisted and truth violated by those who had rendered themselves the instruments of a posthumous revenge whose motive and reality is still doubtful. After hearing the delegates, the members of the Municipal Council forthwith unanimously adopted a resolution to start a subscription in aid of a monument to Daguerre, and they themselves headed the list with a donation of 1,000 francs, promising at the same time to defray all the expenses of the fête at which the monument would be inaugurated. The Mayor of Cormeilles-en-Parisis was appointed to join the Council of the Photographic Union as a member of the organising committee, and he was also directed by the Municipal Council to apply to the Prefect of the Seine and Oise for an official contribution from the General Council of the Department. All these proceedings, which have been received by the photographic world with marked satisfaction, prove more than ever that an act of injustice brings with it sooner or later a reparation conferring fresh brilliancy on the reputation which it was sought to prejudice. Had it not been for the objectionable language in which the committee of the Niepce memorial denounced Daguerre as a usurper, in rendering homage to whom France would be committing a continual wrong, Nicéphore Niepce would alone have been honoured with a monument. As it now stands, the two subscriptions will be raised simultaneously, just as the two partners Daguerre and Niepce walked all their life side by side, and there will be nothing but reprobation for the miserable and unjust attempt to blacken the reputation of one of the fathers of photography at the expense of the other—"All is well, that ends well." The expedition of the delegates of the Photographic Union to the birth-place of Daguerre left, as may be supposed, a vivid impression on their minds. Previously to this, they repaired to Petit Bry-sur-Marne, where Daguerre died, an object of general esteem and admiration, and where his memory is still held in high consideration. On the occasion of their first visit to Cormeilles-en-Parisis they were thus able to take with them authentic information derived from an inspection of his venerated tombstone, which the inhabitants of Petit Bry still decorate every year with funeral wreaths; they had also obtained a knowledge of his pursuits while he lived there from the mouth of some of his old friends, who still survive, and had even been permitted to see some of

his works, more especially a splendid picture painted by Daguerre for the church of Petit Bry. At Cormeilles-en-Parisis it was not apparently known, at the time of their first visit, that one of the most celebrated inventors of modern times had first seen the light there, and it was only when they visited the place that the delegates were able to examine, not without natural emotion, the baptismal register which attests the birth of Daguerre. So far back as that a civil register of births was not kept; an ordinary oblong writing-book, whose paper is yellow with age, and whose parchment cover was nibbled by mice and perforated by worms, contains the attestation of the village notary and his witnesses, that his family had been increased by the birth of a male child, whose cries, probably, often invaded the silence of his modest office. The actual house where the rays of the sun first fell on the head of Daguerre, already stamped with the marks of genius, has not yet been discovered, but researches are being made which are sure to reveal the secret. When it is known, Cormeilles-en-Parisis may, perhaps, even before the statue is erected there, become a shrine to which the enthusiasts for photography, daily increasing in number, may direct their pilgrimage. Cormeilles is, moreover, one of the prettiest villages in the neighbourhood of Paris; it lies in one of the most lovely spots in the valley of the Seine, and at the foot of a shady hill, from the summit of which is obtained a magnificent view of the environs of the vast city. In regarding this grand panorama, the eye traverses an atmosphere impregnated with the delicious scents of the trees, and stirred by the fresh breezes of the river with its capricious windings, and penetrates to an endless horizon, where country seats and villas without number indicate the positions of Montmorency, Enghein, Argenteuil, Pontoise, and Maisons-Lafitte. Crowning this hill, which is unfortunately very little known to strangers, are the mills of Sannois and Orgemont, whence the Germans in the last war fired their first shells into Paris. Rather more than half a mile distance from the village of Cormeilles flows the Seine, which at that point waters one of the extremities of the forest of Saint-Germain. The lovely little hamlet situated at this spot is called La Frette, and a short way off the beautiful river joins the Marne, close to the village which for that reason has received the name of Conflans (Confluent). It will be easily understood that a child endowed as Daguerre was would soon, amidst such surroundings, develop a love for the beauties of nature. Is it to be wondered at that he became, while still a young man, an artist painter of some merit, whose landscapes obtained considerable success—that he was the first in France to construct and direct a diorama, of which connoisseurs still speak with enthusiasm, and whose total destruction by fire they remember with regret? Was not a man living as he did among such scenes of natural beauty, where the light displayed so many different tones and rendered so many different effects, more likely than another, by constantly studying that light, to drag from it its secrets—to take it captive in order to compel it to leave the image that it had traced?

A Magistrate's Opinion of the Intelligence of Photographers.—Though Daguerre—I allude to this in order not to make the transition to what I am now going to relate too abrupt—was compelled to make great calls both on his power of work and on his own imagination, to be able to invent that which we now call photography, such great efforts, so much application, are certainly not required to become a photographer. In my last letter that appeared in the PHOTOGRAPHIC NEWS, I said—and I now again repeat—that French photographers, with some few exceptions, take no trouble to raise themselves and their profession to a higher rank of artistic excellence; but I am not, thank God, of the same opinion as the magistrate who, according to the Paris newspapers, will not allow photographers to serve on a jury in the assize courts, the reason alleged being that "photographers are not sufficiently intelligent." The account seems to be perfectly authentic, for it was first pub-

lished in the *Siecle*, which is a trustworthy and important paper, and no contradiction or denial of the truth of the statement has since appeared. It appears, therefore, to be a fact that a magistrate has actually prohibited a commissioner charged with the function of drawing up the jury lists, from including on one of them the name of a well known photographer—one whose profession is given on official documents as "Painter and Photographer"—for the incredible reason which I have just mentioned. The journals justly inquire, what have photographers done to this magistrate that he holds them in so light estimation? Have they produced portraits of him which were rather real than flattering? Have they forgotten to touch out the wrinkles and the warts? Or did the camera omit to shorten his ears? It is difficult to understand why the practice of reproducing on small squares of card the features of our fellowmen, however obscure they may be, should lower our intelligence and pervert our judgment. Photographers have too often been of service to the magistracy that a precedent should be made of the manner in which one has been treated; the Bench has both used and abused them sufficiently to be just towards them. What is most amusing in the whole story is, that the rejected photographer had retired for some time past from the practice of his profession, and so soon as this was made clear to the peculiar, though apparently limited, intellect of the magistrate, he allowed his name to be reinstated on the list from which he had previously caused it to be expunged. Legislation of this kind will probably make a mark, especially in the psychological and physiological world; this second Solomon seems to believe that working photographers have no common sense, but that retired photographers may be endowed with it; so soon as they give up practice they regain their intelligence; they may be capable of reasoning before or after, but never while, they are operators. At the moment when their camera is directed on an object, night suddenly descends upon the spirit: their brain becomes a chamber of darkness, and they do not regain their reason until the sun has accomplished his work. In France, therefore, any one operating on the sunlight must not be allowed to have the same rights as his fellow-citizens. With all due deference to this magistrate, however, and at the risk of having my name erased from the jury lists, I make bold to tell him that, if ever the occasion arises, I should prefer being judged by the nearest photographer to being put on my trial before him.

K. VERSNAEYEN.

AMATEUR PHOTOGRAPHY.

BY CAPTAIN ABNEY, F.R.S.*

As a fact, it can scarcely be gainsaid that the art side of nature is capable of giving the most pleasure to the largest number of people. It is not everyone who has the time or talent for studying her from the science point of view; though to those who possess both, the enjoyment felt is perhaps the most intense, and is more frequent, since everything, from the smallest microscopically discerned atom to the loftiest mountain, and to most distant star, is a subject for admiration and research. Nothing is too small and insignificant, and nothing is too large or complicated, for such a student. Unfortunately, there are some who allow both aspects of nature to be unobserved, and these lose a mental enjoyment for which nothing merely physical can compensate.

What is it that makes a denizen of our closely-packed towns wish for a run in the country, and that a pretty part of it? Perhaps it is a longing to enjoy the fragrance of the wayside flowers, to bask in idleness and lazy thought in the shade of the glorious trees, and to listen to the sighing of the wind making soft harmonies in the branches. So far, such longing may be said to be sensuous, but if the mind be touched by the look of nature herself, and the

enjoyment produce mental activity, then the art chord is struck. There are many who feel this enjoyment, and who desire to carry back to their homes some souvenir, however small, of the scene which has given them a sense of mental elevation, and which would enable them to recall the sensations of pleasure they felt stirred within them. The pencil or the colour-box may be strange in their hands, and they may lack the manual dexterity to use them. It may be that they have not time to spare to undergo the drudgery of learning the mysteries of such art, and shrink from the ordeal of wading through those freehand copies of curious scrolls which delight the great ones at South Kensington, and without which the eye and hand are not supposed to be trained. Can nothing be done to help these—no other means of cultivating the art innate within them? Fortunately there is—photography. A few years back photography was a black art, judging by the hands and often the clothes of its devotees, and this alone prevented its employment by many who otherwise would thankfully have made it an ally. But *nous avons change tout cela*. Progress has been made in the manipulations, and processes have been so simplified that the stigma of "uncleanliness" has been taken away, and a persevering tyro may command success. The influence that photography has had on art is undoubted, and without offence to our prominent artists, it must be said that it has made the pictures of to-day truer to nature than those of fifty years back.

A day in the country to one accustomed to the camera means something totally different from a day in the country to one who has no pretence of a love of art, and it behoves the former to beware of seeking the companionship of the latter unless an explicit compact be made beforehand. The mere pedestrian whose sole object is to exercise his limbs, and cover so much ground during the day will, as a rule, consider the devotee of photography a nuisance, and his camera an unmitigated bore. The companionship of a brother in the art, however, is to be sought, as there is a certain healthful stimulus given to the perceptions through competition. We have been frequently asked as to the apparatus required by the amateur for his day's excursions, and it may probably be an encouragement to some if a few words are said on the subject. The sizes of plates that are used vary so much that a selection is somewhat difficult. Of one thing we are certain, that in order to prevent the day's outing from being anything but a pleasure, the load carried should be light. Some of our mountaineers tell us that from fourteen to twenty pounds in weight may be carried conveniently on one's back for a whole day without much sense of fatigue; but it must be remembered that this has reference to those who are in tolerable training. For an ordinary mortal the weight carried should not exceed fourteen pounds, and even then the load should be distributed about the body in such a manner that fatigue of any one part is avoided. A friend of ours, who is a great pedestrian, and every summer wanders into the Tyrol or Switzerland, and carries his knapsack for his whole kit, manages to include about four pounds weight of photographic apparatus with him. His plates are small, about three inches square; and he is able to take his camera, and perhaps three dozen dry plates, with him, and thus to secure reminiscences of his travels—and very charming they are even to those who have not had the fortune to have made a personal acquaintance with the scenes themselves—beginning, perhaps, in some quaint Swiss town, gradually taking you up the icy slopes of Monte Rosa, and finally landing you at Boulogne. Such a size of picture, however, is usually too small, and our friend finds the interest in them increased many-fold by enlarging them on his return home. For the ordinary amateur this last process is not to be thought of unless he have spare time at his command, or can afford to get the enlargements made for him by some professional; so we recommend a larger size of picture, say 7½ inches by 5½ inches. This gives a pretty shape, not too narrow, when

* *Cassell's Magazine*.

the pictures have to be taken with the $7\frac{1}{4}$ inches in a vertical direction, and yet not too broad for the picture when the greatest length is horizontal. The equipment, with its weight, is shown in the following column:—

Camera	lbs.
Dark slide	3
Changing box to hold one dozen plates ...	5
Lens	$\frac{1}{4}$
Focussing cloth	$\frac{1}{4}$
Set of camera legs and stand	2
<hr/>	
	11 $\frac{1}{2}$

Here, then, we have an equipment weighing nearly twelve pounds, with which we may be able to secure a dozen pictures, and which can be slung about the body in such a manner as to distribute the weight. The changing box is a box holding a dozen plates, which can be prepared by a method we shall give presently, and from which a plate can be placed in the dark slide without seeing light. The exposed plate is first slipped into the box, and the dark slide is then refilled from the changing box itself.

Such a kit is very different from that required in the old days, when the wet process was the only one which would give certain results; for then we were troubled with dark tents, bottles of solutions, and any number of et ceteras, in order that the picture might be developed on the spot. By the present arrangement we are saved all these encumbrances, and the photographer may plant his camera on any spot to which he can travel himself, without being hindered by the consideration as to whether his other baggage can follow him. As to the preparations which a day's outing require, they are small, particularly if economy is not the great object; for in the market there are numerous brands of dry plates, more or less good, which can be made use of at a moderate price. Our own advice is to purchase one kind of plates, and prepare the others. The plates to be purchased are those known as gelatine plates, and they are most excellent for certain purposes, such as instantaneous pictures of cattle, street scenes, and such other views in which there is a state of unrest in parts. They are exquisitely sensitive, and an exposure in the camera of a quarter of a second in bright light will give every detail which is thrown on the focussing screen of the camera. For ordinary views, however, we recommend the amateur to purchase from some well-known house a few ounces of what is known as washed collodion emulsion, and to prepare his own plates, and if to such an emulsion we recommend the addition of one-sixth part of its bulk of a solution of gum guaiacum in alcohol, we think the chances of success are increased. Then the manipulations in the preparation of the plates are so simple. The problem is reduced to this: in a room lighted by a candle shaded with a red shade you are given a bottle of sensitive emulsion and a clean glass plate; it is required to coat the latter with an even film of the former. That is all! There is really no difficulty in it. The emulsion flows over the plate like oil, and any excess is allowed to drain off. When the solvents employed in the emulsion have partially evaporated, the plate is reared up in a box to dry. This desiccation takes, perhaps, one hour to effect; when complete it is ready to be transferred to the changing box already described. The dozen plates, in fact, may be prepared at nine o'clock at night and be ready for use at ten, if the room be moderately warm. Only beware of dust, and the plates will be a success.

(To be continued.)

PHOTOGRAPHY AS APPLIED TO THE REPRODUCTION OF PLANS AND DRAWINGS.

BY DAVID TOWNSEND, B.S.*

URANIUM.—The salts of uranium are affected similarly to those of iron, but they offer no advantages over the iron

salts, and are besides very expensive. Those who desire to try them may use the following formulas.

A good quality of paper must be taken and sensitized by floating for six or eight minutes on a solution of

Uranic nitrate	1 part
Dist. water	60 parts

When dry the paper is exposed under a drawing for ten or fifteen minutes, and is then removed and developed by floating on

Ferricyanide of potassium... ..	1 part
Water	250 parts
Nitric acid	2 drops

In about five minutes a brown picture will appear, which is fixed by washing in slightly acidulated water.

To produce a grey picture the print is floated on a bath of

Silver nitrate	1 part
Water	20 parts
Acetic acid	a trace

The development is very rapid in this solution, being complete in thirty seconds, after which it must be taken out and thoroughly washed in clean water. Red, green, or violet pictures may also be produced, by developing on ferrocyanide of potassium, perchloride of iron, or chloride of gold.

CHROMIUM.—The fourth and last salts are those of chromium, only two of which are commonly used, namely, the bichromates of potassium and ammonium. These form the basis for a number of valuable processes, one of which is at present attracting much attention in Germany, where it has been carried to a high state of perfection in the reproduction of drawings and fine engravings. It is called the

ANILINE PROCESS.—This was invented by Mr. Willis in 1864. It depends on the fact that when potassium bichromate, in the presence of organic matter, is exposed to the action of light, free chromic acid is formed, and the protected parts, which still remain as bichromate, form aniline colours when exposed to the vapors of aniline salts. The process, in detail, consists of the following operations:—

- (1) Sensitizing the paper; (2) Exposing; (3) Fuming; (4) Washing.

(1) Sensitizing.—The best Saxe paper must be used, as no other will give satisfactory results. The sensitizing solution consists of

Potassium bichromate	1 part
Phosphoric acid, sp. gr. 1.124	8 to 10 parts
Distilled water	10 to 12 "

The paper, after being cut and the finest side selected for use, is pinned to a clean, flat board. Some of the solution is poured into a dish, and the paper is sensitized by means of a stiff brush about one inch wide, which is dipped into the liquid and then painted on paper, first lengthwise and afterwards across, without renewing the liquid on the brush. Finally, a soft camel's-hair brush, about three inches wide, is used to remove all superfluous liquid and smooth out any streaks left by the first brushing. The solution may also be applied with a soft sponge, but the first method is preferable, as the fingers are not then brought into contact with the bichromate, which is a violent poison. The sheet is now hung up and allowed to dry slowly, it being complete in from fifteen to twenty minutes. The operation should be performed in a dark room lighted with a lamp having a yellow chimney. Ordinary yellow light is not sufficiently non-actinic, owing to the extreme sensitiveness of the paper, which is easily affected by the least light. When dry, it may be preserved for some time unaltered in the dark. The brushes should be thoroughly washed each time they are used, and carefully protected from dirt.

(2) Exposing.—The prepared paper is now placed in the printing frame, under the tracing, covered with a black cloth, and carried into the sunlight. The length of exposure will vary with the time of the year; in summer being about twenty seconds, and in winter forty seconds. The surest method is to use Vogel's photometer, and carry the

* Continued from page 417.

exposure to sixteen degrees, but as this cannot always be obtained, experiments may be made to determine it. This is the most important part of the whole process, because undue exposure will not reduce the bichromate sufficiently, and over-exposure renders the paper less liable to form aniline colours. When the paper is rightly prepared, it should be a light yellow colour, and after exposure, on opening the frame, a faint yellow picture will be observed on a greenish ground.

(3) *Fuming*.—When the exposure is judged sufficient, the cloth is replaced and the frame carried back into the dark-room, where it is opened, the picture removed, and pinned to the lid of a fuming box. The box is provided with a sheet of glass, on which is blotting-paper soaked with a solution of

Aniline oil 1 part
Benzine 10 parts

and which can be lowered or raised at pleasure by means of cross-pieces of wood at different heights. It is allowed to remain thirty minutes, when the picture, if rightly exposed, will be sufficiently developed, and will show a dark brown or purple picture on a grey ground. If the image is rather faint, it should be fumed longer.

(4) *Washing*.—On taking out the print, it must be washed for some time in at least four changes of water,

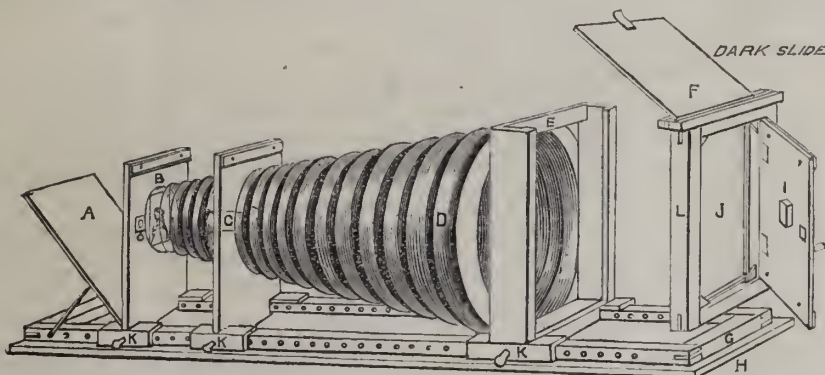
when the colours will be fast, and, after drying, the picture is finished. Great care must be taken not to handle the sensitive paper any more than is absolutely necessary, and then only with perfectly clean hands; also to perform all the operations in absolutely non-actinic light.

In review, we conclude that, in point of cheapness, the blue process has the preference; but, for certainty of results and general reliability under all conditions, the silver process is the best. I should, therefore, recommend it in all cases where first cost will not be a consideration compared to convenience and saving of time.

ENLARGING CAMERA.

BY FRED. T. WEBB.*

For producing a large print from small negative or a large negative from a small transparency. Many amateurs (myself included) often obtain a negative yielding proofs that are (to them) all that could be desired, and wish they could produce them on a larger scale, but owing to the expensive apparatus which they would have to purchase they are (though often reluctantly) obliged to abandon the idea. Therefore I describe a camera which anyone may make, and from the sketch which I enclose, with explanations, have no doubt but some of your readers will appreciate it.



A, mirror to reflect light through negative or transparency B; C, lens; D, black calico lined with yellow, with wire rings inside, and india-rubber bands outside to form the bellows; E, space for dark slide when taking the picture; F, sliding shutter; G, frame screwed on to boards H; I, piece of cork to press against the glass plate; K, peg to adjust the focus. The dark slide can be used as a substitute for focussing frame by placing a piece of ground glass at J, which can be removed to make room for glass which supports paper or intended negative. The frame G, 46in. by 14in., the holes for the pegs K to be 1in. apart, the dark slide to take glass plate 16½in. by 12½in., for pictures 16in. by 12in., the frame L to be 1½in. thick. When enlarging a ¼ plate negative four times, after allowing ½in. margin all round, in small negative to 16in. by 12in., the distance from negative B to lens C will be 7½in. (with a lens of 6in. focus); and 30in. from C to E, which can readily be measured off by the pegs K. To enlarge three times will be 8in. B to C, 24in. C to E, thus enlarging to 9in. by 12in. To enlarge twice the size will be 9in. from B to C, 18in. from C to E. To copy the same size B to C 12in., C to E 12in. When copying C.D.V. the calico bellows from B to C and mirror A can be dispensed with.

SOLAR ENLARGEMENTS.

At a recent meeting of the Chicago Photographic Society, Mr. Fitzgerald called attention to the solar enlargements exhibited before the Society, made by the Wolfe and Stigleman processes, a mode of producing enlargements by

the solar camera said to give very fine results. He "though he had done as fine work in his way, which, for the benefit of the members and others, he would briefly state. If a new negative is to be made, have some glass, one side of which is ground very free; make your negative then for the solar in the usual way, flow it with a water varnish, easily made, as I will explain further on. After the negative is dry, retouch it in the usual way, and then varnish the ground side with any alcoholic varnish (Mountfort's is excellent); heat the negative slightly. As usual when varnishing, this makes it translucent, and the enlargement will be as fine, if your negative is good, as any contact print. You can also use the same negative for the usual contact prints by printing under ground-glass or tissue-paper. If you want to enlarge from a negative from your collection, take off the varnish by laying it in a dish of alcohol, then reduce the intensity by any of the usual methods. I use mercury and cyanide, varnish with the water varnish, and laying the negative on a clean blotting-pad, face down, take flour of emery and water, with a small piece of glass, and, rubbing briskly, grind the smooth surface fine and even; wash carefully, and dry; retouch, varnish the ground side as before, and use in your solar; the negative can be used for contact prints also. To make the water varnish, which, by the way, is the best retouching varnish made, as follows:—Take

Orange shellac	...	...	5 ounces
Borax	...	...	1 ounce
Water	...	...	1 pint

Digest at nearly the boiling point until dissolved, then filter.

* *English Mechanic*.

The Photographic News.

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IN MEMORIAM.—OLIVER SARONY.

It is our painful duty to announce the death of Mr. Sarony, of Scarborough, one of the most successful and distinguished of photographic portraitists. His history and career have been a living monument of the results to be obtained by energy and enterprise. Oliver Francois Xavier Sarony was in his sixtieth year, having been born in February, 1820. He was of Italian origin, his father having been an officer in the Austrian army, retired from which he settled in Canada, Oliver having been born in Quebec. The elder Sarony dying, Oliver and his brother Napoleon were thrown on their own resources at any early age, and we find Oliver a youth in his teens, nothing daunted, establishing a business in travelling from Canada with beaver furs for hats into New York, and carrying also contraband silk for silk hats. He was soon to abandon, however, this at the time fairly lucrative trade.

Whilst in New York one day he was taken by his brother Napoleon—who, like more than a child, had established himself to make a living in that city by lithography—to see a most wonderful sight, a machine which took portraits. Oliver's wonder and admiration took a practical form. He at once asked the Daguerreotypist for what sum he would teach the art and supply the apparatus. Ultimately we find that by piling together all his means, and adding thereto his silver watch, young Oliver had become possessed of a camera, lens, and complete Daguerreotype equipment, together with the knowledge and skill to use them. This was soon after 1840. He practised his newly acquired art with varying success, but on the whole with satisfaction, in Canada and the States. Early in his career he was urged by a captain of a vessel, whose portrait he had taken, to visit the old country, where, with such an art, he might make a fortune. He sailed with the captain for an Irish port, and proceeded to practise his art in Ireland as early as 1843. Shortly afterwards he reached England, and commenced a line of business for which he became famous. He fitted up a very handsome and commodious travelling studio, and either personally or by an agent showing specimens to the gentry resident in the district he passed through. As he at all times produced the very highest class of work, he found plenty of patronage. He also occasionally travelled from town to town establishing studios, which, after working successfully for a few months or more, he would often sell, and settle for a time elsewhere. Eventually he settled in Scarborough in 1857, and established branches in other important large towns. To a rare amount of business tact and shrewd enterprise

Mr. Sarony added a fine artistic taste and manipulative skill, and his work, and all sent from his establishment, was of the highest quality, and generally in the newest and best styles which had been introduced into the art. He was also ingenious and practical, as many of his mechanical inventions attest.

He was one of the earliest to appreciate the value of Swan's carbon process, and to adopt it regularly in his business as a portraitist. When the next great advance in simplicity of working pigment printing was made by Mr. Johnson, Mr. Sarony was quick to see and adopt its advantages. He was always in the van of practical photography, accepting every improvement with eagerness, and introducing not a few. His name was, to some extent, at times associated with process vending, a form of business which can rarely be carried out without gaining obloquy, as the purchaser of a process which he fails to work satisfactorily rarely blames his own want of skill. We can say without hesitation of Mr. Sarony in this regard that he never sold a process which had not excited his enthusiasm with the beauty of the results it yielded in his hands, and which in his view was not quite new. He was at all times full of keen restless enterprise, which found its vent in some very great works, by which his adopted home, Scarborough, greatly benefitted. The handsome series of buildings, now in a fashionable neighbourhood named Sarony Square, was, when he first began to build upon it, a barren piece of land in an outlying district, and the improvement in South Cliff has done much to establish Scarborough as the Queen of fashionable watering places. The studio, in the centre of the square, which has been described in those pages before, is most magnificent in its appointments. His most recent enterprise in connection with Scarborough was the erection of a beautiful circus, considered the finest in England, capable of accommodating 2,500 persons.

Returning to his photographic enterprise, Mr. Sarony's especial delight and pride was to take an order for an oil-painted enlargement from a customer whose original purpose was to have a dozen card portraits. We have seen him engaged in such an enterprise, and watched his almost child-like delight in the success of his efforts. Selecting the most pleasing of two or three negatives which had been taken, it was handed into a distinct department fitted up for rapidly producing transparencies. A transparency obtained, it was placed in a magic lantern kept ready, and a life-size image was thrown on the screen. Mr. Sarony had, in the meantime, invited the sitter and his wife into a gallery of life-size portraits well painted in oil, and handsomely framed. These, of course, elicited admiration, and eventually Mr. Sarony led his visitors into the room where a fine portrait of the gentleman was presented life-size on the screen. The effect, as all photographers know, is very striking and effective, and fully admits of a little eloquent talk on its fitness for painting. Mr. Sarony talked well and gracefully, with a frank candour that won belief; and on the occasion in question he took an order for an "oil" at sixty guineas.

Mr. Sarony was a man of considerable ability in other directions besides photography. He was possessed of very great physical strength and activity, and was a fine swimmer, fortunately for several who owed to him their rescue from drowning during the course of his life. His memorable attempt to save life in a storm off the Scarborough coast in 1861 is re-told on another page, and forms a tale as thrilling as the wildest romance. For this he received the gold medal of the Royal Humane Society, of which he was very proud, his kindly and generous nature rejoicing more in this tribute to his bravery and unselfish risk of his own life than in the success of his commercial enterprises. His most intimate friends knew him as a generous, large-hearted, and good-natured man; whilst the majority of our readers knew him as a skilful photographer of rare enterprise and great success.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

PHOTOGRAPHIC PRIZES.

THE following are the prizes awarded to professional and amateur photographers exhibiting in the Photographic Department of the Royal Cornwall Polytechnic Society. A full report in our next:—

Landscape.—No. 593. English and Irish scenery, Payne Jennings, 1st silver; 625. Oxford and Cambridge Boat Race (instantaneous), Wratten and Wainwright—1st silver; 594 to 600. Willis's Platinotype Process—2nd silver; 616. Interiors, R. C. Lenthall—2nd bronze.

Portraiture.—No. 590. Portrait Study, W. Gillard—1st bronze; 588. Portraits by the Gelatine Process, Hills and Saunders—1st bronze; 589. Three Portraits, E. Greaves—1st bronze; 576. Group (dry plate), Russell and Sons—2nd bronze; 626. Enlarged Group, G. Cocking—2nd bronze.

Amateur.—Nos. 702 and 703. Arctic Photographs, J. A. Grant—2nd silver.

Liverpool Dry Plates.—711. Three Frames of Views (dry plates), Andrew Pringle—2nd silver; 717. Transparencies, H. Manfield—1st bronze.

Photo-Appliances Department.—No. 741. Changing Box, G. Hare—1st bronze; 745. Duplex Lantern, H. Kevil—1st bronze; 747. The Malden Triple Lantern, J. Middleton—2nd silver.

"LOOKING BACK."

BY AN OPERATOR.

INTRODUCTION.

GENTLE READER! I have no doubt but that my simple title has called up in your mind's eye a host of varied scenes—scenes both sad and gay! For who can look back for a few years without mentally marking some gloomy epoch, some heavy shadowed Rembrandt picture, of our private life, when grim death has marshalled from our sphere some loved and cherished one—when the cheery voice was silent, when the kindly heart had ceased to beat—when the cheerful home was sad, and its homeliness covered with the trappings and suits of woe? Yet, side by side with this (so wonderfully are our lives blended by sunlight and shadow), will start up the recollection of some happy day, a bright oasis easting forth its grateful perfumes on a barren field, and softening with its light the darker picture of the past.

Such were my feelings when the above title to these sketches was suggested. The instantaneous thoughts called up were anything but pleasant, and in fact I eyed it askance and with something of aversion. Presently, as I gazed into the firelight, the gloomier pictures rolled away, and sunny spots appeared; brighter and brighter they grew; one by one my old hopes were revived; my youth renewed; from their far-spread graves my friends once more were with me. I moved in the past—in the spring-time of my life—in the season of flowers and green leaves and whispering winds, when the heart was light and the brow unclouded with care!

Some of these bright spots and shifting scenes I mean to place before the reader, my aim being more to give half an hour's amusement rather than impart knowledge, although possibly I may be afflicted by the same disease as a well-known writer, so that particles of wisdom may ooze out of my pen along with the ink, without my being aware of it.

I finish this short introduction with the words of Othello, promising to

—“Neither extenuate,
Nor set down aught in malice.”

CHAPTER I.

MY FIRST SITUATION—THE “FIRST PHOTOGRAPHER”—A
NEW DEVELOPER.

YEARS and years ago, when ladies wore crinolines, and gentlemen peg-tops—when the Daguerreotype and glass

picture had got their parting kick, and King Silver-print ruled instead—when full-length pictures were the fashion, and the photographer had to dispose, gracefully, of the legs and arms of the gentlemen, and the cart-loads of steel hooping and drapery of the ladies—condensing—condensing them into the smallest room possible, so as to show off the pedestal—the fluted column of the open easement that looked forth upon the proverbial eternal summer with the ravishing landscape!—I assure you it took a good deal of material to make up a proper carte-de-visite in those days! Here let my brother-workmen pause for a moment, and, looking back (if they can) the matter of twenty years, view the difference between the tiny, miserable, cross-legged, arms-akinibo picture of the past, and finely-lighted, beautifully-posed, and highly-retouched cabinet heads of the present.

Comparisons are odious! Odious enough in this case, for, truth to tell, I feel rather hysterical when I happen to come across any of my very young work. To an old hand like myself there is an awe and sublimity about those serewed and stuck-up figures that rob one of the hearty laugh that the younger learner generally indulges in when he happens to stumble upon them. To me they seem hallowed shades of a generation that has passed away—remnants of a crude barbaric and remote period!

Yes; those were the days when retouching was unheard of, when the negative had to be made dense to hide the wrinkles and freckles, and had to be re-developed by main strength, so to speak—those were the days when I had no cares or razors!

I used to delight in journeys then, and I can recollect how proud and big and manly I felt when I first set foot in a certain northern city. I was out in the world, and was about to earn my own bread. I had thrown off the leading strings of my parents, and gone forth, sword in hand, to open the oyster myself. Everyone must recollect the perfect sense of freedom that stole over them when they found themselves without the range of their guardian's watchful eye—when, like me, they went out full of high hopes to fill their first situation.

I was engaged to a Mr. Ballarat as assistant. Ballarat was a strange, wild, but withal honest fellow. He had seen a lot of the world, and had mingled with a class that did not tend to refine or heighten his aspirations. He had been in Australia at the diggin's, and, as he said himself, “he lost a lot of good time and a few good principles there.”

Having a natural tendency to chemical science, luck at a little bit of research threw him in the way of the Daguerreotype; “and my boy,” he exclaimed with a wave of his hand, “I was the first to produce those pictures in Melbourne!”

He was the first—the very first that I heard exclaim those words—those wonderful words that I have heard repeated in solemn, truth-inspiring tones, hundreds of times, the vicinity being the only alteration.

He was quite a character—that first photographer! Go wherever you like, you are sure to meet him. It is a hundred to one he has left the profession and ekes out a shabby-genteel existence in canvassing for portrait clubs, life insurance societies, or the new Encyclopedia. He is a wonderfully shrewd fellow, and by instinct knows a photographer a street off. He will watch his chance for weeks, and will pounce upon his victim when least expected. He then goes to work in a roundabout way, and at length surprises his victim by a few technical questions, as “Do you use the phosphate toning now?” or “What re-developer do you have?” This naturally surprises the victim into exclaiming, “Why, you seem to know something about photography!” “I should rather think so,” is the answer given with a knowing wink. “My dear sir, I was the first man that ever used a camera in this town!” Should the victim be green to his class, and express by word or look any kind of interest, he is imme-

diately button-holed, and has to listen to a disual romance, finishing up with the remark, "You know, you seem a good sort of chap, and if you like to come up home, I'll let you see my old apparatus, fuzing box, and everything complete!" He strikes an attitude here, and looks to his victim for profuse thanks.

My readers are sure to know the first man: there certainly must be first men; but when you meet as many as twenty-five claimants in one small place, your reason tells you that twenty-four of them are mistaken.

When I was in Iceland a Dane joined our bivouac at the foot of Mount Heela, and Tom Howie, of whom I shall tell you more anon, managed to talk to him by means of signs and clippings off all the languages, dead or quick. When I asked Tom what he said, he replied: "He says he was the first man that took a photograph in Copenhagen."

Still, I have little doubt but what Ballarat took the first pictures in Melbourne. It seemed to please him to say so, and it did no one any harm. At the time I engaged to him, he had a steady-going middle-class trade, employing four young ladies—two of whom did the printing—a boy to clean plates, &c., and your humble servant. If Ballarat was not the best photographer, he was the biggest I ever met with. He stood over six feet, and stout in proportion, with a great, good-humoured face adorned with hirsute appendages in the shape of huge bushy whiskers. He had a lounging gait, and altogether smacked of the bush.

To his strict attention to cleanliness he to a great extent owed his success. "Dirt is the root of all evil, my boy," he used to say—a fact that stands undoubted to this day. If there was the slightest spot on a print, it was torn immediately; the least blur on a negative, it was condemned. I know this to be the rule in every high-class establishment, but neglect of the said rule was the rock on which so many of the early photographers got wrecked.

"Come, I will show you over the shop," were his first words after a hearty shake of the hand. "First let us go to the glass room." We accordingly went there, and found it to be small, with a low ridge roof, such as almost all the studios were in those days. When Ballarat was operating upon a family, it was crowded. When he walked from the camera to adjust something about the sitter, it shook and trembled under his tread; and when he laughed to reassure his sitter, the glass overhead jingled unpleasantly. Still, good pictures were obtained there with little trouble at any hour, for, either by luck or good management, Ballarat had built his studio to a pure north-east light.

"Small, my boy, but compact," was Ballarat's comment as he glanced complacently round the room. "Now for the dark room. Recolent, my boy," he continued, as he paused in the doorway, "that all that transpires within the sacred precincts of this hallowed spot is secret—secret and silent as the grave! When once within the mystic light of the yellow window, you can drop the complacent smile that deludes your sitters, and pull faces at them—yea, shake your fist at them if so inclined. Here you can, with impunity, give way to profane language when unruly infants try your temper too much. Here, in short, you may riot in exclamations unfit to be published in the weekly journals; but have a care to go forth to the ætæic light and your sitter with an air of success, and a beaming countenance. That's the way I do it, my boy, and it answers splendidly!"

Here he winked and chuckled so heartily that it was impossible not to join him. After being duly shown the bath, developer, cyanide, &c., he suddenly turned to a shelf, under which sat the dark slides, and, pointing with his finger, said, with a theatrical air, "Behold!"

Where he pointed stood a bottle that would hold about a quart—it was then about three-fourths full—and on it

it was a large label, indicating it to be "The New Developer."

"Ah, have you a new formula, then?" I asked.

He did not answer me in words; but while he grinned knowingly, he reached the bottle from the shelf, and, uncorking it, held it close to my nose. "Smell," quote he laconically.

"Precious lot of alcohol, anyhow!"

He burst into a loud laugh at my remark, and bringing forth a wine glass filled it with the "new developer," and handed it to me, with the single word, "Taste."

I did taste, and found that the "new developer" was nothing more nor less than good old Irish whiskey.

"Never make a mistake between the two," he exclaimed, after smacking his lips over the empty glass. "Not that the plates would be any the worse of the new, but my stomach might be from an application of the old."

Such was my first employer. I stayed with him over two years, and never was happier in my life. "Come, my boy," he would say on a gloomy winter evening, "bring forth the music, and let us be gay. If there were no sunshine, there would be no shadow—and it is the shadow that makes the picture."

We were very much attached to each other, and were very unwilling to part. You shall learn in my next what induced me to leave him.

(To be continued.)

MR. O. SARONY.

THE following notice of the deceased appeared in the *Scarborough Daily Post* of Saturday, August 30th.

"In our issue to-day we announce the death of Mr. Oliver Sarony, of South Cliff, Scarborough, which melancholy event occurred at his residence early this (Saturday) morning. About a month ago the deceased gentleman had a paralytic stroke from which he never fully recovered. He was attended by his medical adviser, Dr. Wright, but the efforts of the latter failed to check the ravages of the disease, which resulted, as already stated, in his death at five o'clock this morning, when deceased passed away very peacefully.

"Mr. Sarony, who was fifty-nine years of age, was a man of active business habits, and was well-known, both in Scarborough and elsewhere, for the enterprise he displayed in connection with the profession with which he has so long been identified, and which he has conducted so successfully. He first came to Scarborough about twenty-two years ago, and originally resided and carried on business in a house in South Street, South Cliff. His fame as a photographer rapidly spread, and the business increased very considerably. At that time what is now known as Sarony Square was barren land. It was purchased by Mr. Sarony, who erected the spacious and elegant studio at present existing there. From this magnificent establishment, which may be described as one of the most unique and complete to be met with in this country, a most extensive wholesale and retail business has been carried on in every department of art, until the name of Sarony has become a household word in every town in the kingdom. Not only has deceased been extensively patronised by the nobility and aristocracy, but he has received various marks of Royal favour, he having received the commands of Her Majesty the Queen, their Royal Highnesses the Prince and Princess of Wales, and other members of the Royal family to paint portraits, &c. It is not too much to say that Mr. Sarony well merited the high honour thus conferred upon him, for his productions have long been pre-eminently as works of art.

"During the time that he has been in Scarborough Mr. Sarony has been a conspicuous citizen. Starting in life in a humble way of business, he reached the very highest position in his profession, and the energy and enterprise thus displayed entitled him to the respect of his fellow-townsmen. Deceased was of a kindly and generous disposition, and was ever ready to assist any project that had for its object the amelioration of the condition of his less fortunate brethren. That he was not wanting in those qualities of courage and manly vigour which are ever and anon called into play in order to meet some sudden emergency he proved in a significant manner some years ago

on the occasion of the wreck of the *Coupland*, which vessel was driven ashore in a heavy storm opposite the Spa, an event rendered memorable by the lamentable death of Lord Beauchlerk and others. It was on the 2nd of November, 1861, that the schooner *Coupland*, laden with blocks of granite, from Aberdeen, attempted to enter the harbour here during a terrific storm and heavy sea. Being taken aback on rounding the pier, her sails were disabled, and the vessel drifted and ultimately struck on the sands directly opposite the orchestra at the Spa, and perhaps not more than twenty yards from the sea-wall. It was on a Saturday afternoon, about four o'clock, and a number of people were on the Spa promenade watching the ill-fated vessel, amongst whom were Lord Lonsborough, Lord Beauchlerk, Mr. Sarony, and others. The billows washed against the sea-wall of the Spa with such terrific violence that the massive stones of the parapet were dislodged for the entire length of the promenade. The lifeboat was manned and launched, but could not live in the dreadful sea. It was dashed with relentless force against the wall and upset, her gallant crew being left in the angry waters struggling for their lives. A scene of terrible excitement ensued. Those gentlemen on the Spa rushed down the incline to render assistance, and one boatman named James Banks was rescued by Lord Lonsborough. It was in this crisis that a heavy wave struck the gallant band, and threw many of them into the sea. Several of them were dashed against the sea-wall, and some were killed. Lord Beauchlerk was amongst its number, though he was not killed on the spot. He was washed to the foot of the incline, when Mr. Sarony, seeing his Lordship's peril, bravely ran down the incline, and single-handed, succeeded in tying a rope round the body of Lord Beauchlerk. The latter was drawn up the incline, but he shortly afterwards expired. Meanwhile Mr. Sarony had a terrific struggle for his own life. After securing the rope round Lord Beauchlerk (but without a rope round his own body), he was carried out to sea many times and dashed about like a toy on the crest of the surging billows. In this awful crisis his great presence of mind and experience stood him in good stead, for instead of battling with the waves he rolled himself together and let them bring him back, when he was seized by Mr. John Bell and others and dragged up the cliff by ropes. Mr. Sarony, however, was so terribly exhausted that three hours elapsed before circulation was restored. So nearly had he sacrificed his own life in attempting to save others. In addition to Lord Beauchlerk, Mr. Wm. Tindall, son of the late John Tindall, Esq., and several other individuals, also lost their lives. The crew of the schooner were ultimately got off with the rocket apparatus in a dreadfully exhausted state. Deceased was often and justly complimented in after life for the praiseworthy way in which he distinguished himself on that memorable occasion. We understand that the business of the firm will be carried on as usual. The deceased leaves a widow, but no children.

SOME CURIOUS EXPERIMENTS.

At a recent meeting of the Chicago Photographic Association Mr. Joshua Smith read the following paper:

"During the year 1876, while pursuing some experiments on the development of the latent image, I noted some very interesting and useful results, which to-night I will place before you as the sequel to the demonstration I made before the Association during the autumn of that year. I was using bromide of copper for intensifying, and it occurred to me that the negative might be converted into a positive with nitric acid, but on trial the acid produced no effect. I then prepared another plate with the bromide of copper, and placed it in a dish containing hyposulphite of soda, when the image entirely disappeared, leaving nothing but the clear glass. I now began to experiment to recover the lost image, and after washing the plate, flowed upon it a solution of pyrogallie acid and silver. The image immediately appeared, and was brought to a full printing strength without trouble, having all the detail it possessed originally. This same plate was again treated with the bromide of copper solution, the image dissolved again with the hyposulphite of soda, and again developed, and I continued the same treatment for at least six times, and without in the

least endangering the film; the only precaution necessary being the careful washing of the plate to avoid stains. The pyrogallie acid solution used was twenty grains strong, with about two drops of silver solution to the ounce. This method offers something for those who are in search of a way of producing 'spirit' pictures. It is also very useful for reducing the negative for solar work, as the strength of any negative can be reduced to any point required. It is also a very pretty and useful experiment in the lecture-room, as the demonstration can be made in a glass bath, and in either gas or daylight. I have tried various other methods, but this in my hands gives the best results."

Correspondence.

MOUNTING MATERIAL.

SIR,—As I so many times have read about new mounting materials in the *PHOTOGRAPHIC NEWS*, I suppose many have yet the same trouble with them as I had, until it turned up in my memory the paste I used when, as a school-boy (happy days, alas! they were a long time since), I made my paper kites and balloons.

Bring 100 c.c. of water to the boiling point, and take 20 grains of wheaten starch, and make with about 15 c.c. of cold water into a thick paste. As soon as the water is boiling take it and pour in in *one swoop, not slowly by-and-bye*, into this paste, and immediately begin properly to mix it up. The result is at once the finest mounting material, which, after the addition of sufficient of carbolic or salicylic acid, and kept in a cool place, will only deteriorate by drying up. I wish to call this the receipt out of the workshop (or, less jarring for minds of a more æsthetical or poetical term, studio or atelier) of "Old Great Grandfather," and am certain the whole globe will agree with me it is the best.

In pouring a thin, cold paste into boiling water, or boiling a thin, cold paste, as is generally recommended, a sufficient homogeneity is not attained, which is very natural, as the destruction of the original form of the molecules is not rapid enough; too much energy is lost in the re-arrangement of the new compound. In Old Great Grandfather's receipt, the destruction of the original form of the molecules is so rapid, and the energy destroyed so long, that a serviceable compound necessarily is the result.—I have the honour to be, sir, yours, A. C. S.

PHOTOGRAPHIC COMPANIES.

DEAR SIR,—Are our friends the photographers becoming more credulous, or softer, than hitherto, that they are to be surfeited with companies? In your last issue I noticed a "New British Industry" (worked by Germans!) Is it not somewhat hard, seeing the large number of British workmen unemployed, that we are asked to support foreigners? It is called the British Mount Manufacturing Company. The prospectus states that the photographers of the United Kingdom number 6,000! A third of that number, or say 2,100, is the maximum I could ever find or hear of, and the average consumption of mounts cannot be more than 10,000 or 15,000 per annum at the outside. I know one or two photographers using very large quantities, but to use nearly a 1,000 mounts daily he must be a "rara avis;" indeed, and with one (I suppose a dealer) using 2,000,000 per annum the resources of the "Company" must be severely taxed to supply them. The capital, too, is fabulous for such a concern. I know one firm doing as large a trade as the "Company" with one-fifth of the capital or less. A lad can turn out over 5,000 mounts daily, and a man 8,000 to 10,000. So that four printing presses with two men and two boys would print about 140,000 mounts per week; a lad can round-corner 10,000 mounts in a day (no need to call in foreigners for this branch of the business). As to the "Mangle" employed to polish the cards after printing, one

old gentleman at twelve shillings a week can generate all the steam power necessary for any number of mounts. I do not object to companies with a sufficient "*raison d'être*," but I do object to those with little or none at all. From my experience of the photographic trade I believe they will require a more plausible "*raison d'être*" than the one advanced. I enclose card, and remain,—Yours obediently,
MAGNUS VERITAS.

GELATINE PLATES HONEYCOMBING.

DEAR SIR,—I have been trying my hand at gelatine emulsion making according to Mr. Jarman's method as published a short time back in the NEWS. All went on smoothly enough until I came to the coating of the plates (except a little difficulty in getting the emulsion to set previous to washing), when, instead of the ever matt surface that the Swan plates have, my plates have quite a honeycomb appearance when dry, though they appear right enough when just coated, but on setting, soon begin to present the above appearance.

Thinking the first time I had made some error in emulsifying, I commenced a second time at the beginning, but still the same result. If you can point out the probable cause of my difficulty, I shall feel greatly obliged.—Yours truly,
B. S.

[We have not seen such a defect. Have any of our correspondents who are experienced in gelatine emulsion? Is our correspondent certain that the plates had not commenced to frill? Possibly the film had got loosened, and hypo may have lodged underneath.—Ed.]

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF BERLIN.

At the meeting of the 15th May last, Herr C. BRASCH in the chair,

The first communication of importance was a paper by Herr J. KOLK on the "Cyanotype Process and its Significance in Photography." The speaker described briefly the various photo-tracing processes from aniline printing up to the more modern cyanotype or iron process, with his own improvements of the latter. Some of the specimens of his works which he submitted to the meeting showed the extraordinary delicacy and purity which might be attained by his process, and were received by the members present with every sign of a lively interest. More especial attention was excited by the blue opaque negatives, and the transparent positives with half tones on glass paper. It had always been previously imagined that it was impossible to produce by means of iron salts, negatives from which any required number of positives could be taken, in consequence of the blue of the precipitate formed not being opaque to actinic light. In the process of Herr Kolk, however, this precipitate has a deep blue-black colour, and is so opaque that the positives taken through them render dark, blue-black lines on a perfectly white ground. For professional photographers the transparent positives on glass paper were of great importance, as they are in the highest degree transparent and rich in detail, and when the proper kind of paper is used they are quite free from any sign of graining. Several important improvements have also been introduced by Herr Kolk into photo-lithography. As illustrations of these improvements, he exhibited two photo-lithographs, one prepared by himself, the other by one of the local photographers. In the first of these the drawing was perfectly clean and sharp, though retouching had not at all been resorted to; in the other, notwithstanding that the stone had been worked up by a professional lithographer for more than five hours, the finer portions were completely spoiled by the smudging of the lines.

Herr Kolk also introduced the subject of his discovery "The Production of Negatives in the Camera by means of Glass-paper," and his remarks were listened to with manifest attention. He claims for this method, especially, the advantage that the operator is able to control by ocular examination the progress of the development, though, of course, there must

be always some doubt as to how far the negative goes back in the fixing bath. It was thought, however, that experience of the gelatino dry plate process will be a guide as to the length of exposure, and, independently of that, the extraordinary cheapness and ease in manipulation of Herr Kolk's method are such as to recommend it strongly to notice.

Herr F. WILDE, of Görlitz, next gave some information about his various kinds of dry plates. As regards his positive plates, he assured the meeting that nothing further was necessary by his method than to place the picture, after a powerful over-exposure, in a solution of soda, and afterwards to wash it well. It had been objected by some of the members that in this process a gold toning was necessary, but Herr Wilde again explicitly asserted that there was no occasion for any toning, in which he was corroborated by several of the members present who had tried his plates. These plates he stated to consist of a combination of collodio-chloride of silver with gelatine, however paradoxical it might appear to have in a state of mixture an aqueous solution of gelatine and an alcoholic one of collodion. It must be confessed, however, that the mixture can only be kept for a short time in a fluid state, and was very liable to coagulate, for which reason plates ready for use could only be delivered, and not the collodion necessary for preparing the positive plates oneself. The sensitiveness of the collodio-chloride of silver and gelatine plates is far from being as great as that of gelatino-bromide plates, but then the former are used for quite a different purpose—the production of transparent positives. In this case, too, no development is required, though all other chloride of silver plates must be developed. Exposure in the frames takes about a couple of hours in proportion to the intensity of the negative and the strength of the light; it may even extend to a whole day. The proofs, when taken out of the frames, are laid for from five to six minutes in a 10 per cent. solution of soda, and afterwards only require to be rinsed. When finished, the tone of the negative is an agreeable brownish-yellow, which acts capably in enlarging. Herr Wilde exhibited to the meeting some of his transparent positives by means of a new and improved sciopticon of his own construction, and very lively discussion arose on the comparative merits of enlargements by the silver chloride and by the carbon processes. On the whole, the sense of the meeting was decidedly in favour of Herr Wilde's method, for the simplicity and ease of the manipulations in the silver chloride process more than counterbalance the advantage which carbon possesses in giving greater sensitiveness. Herr Wilde also made some remarks on his gelatine dry plates, and on this subject Herr Brasch observed that after for some time using oxalate of iron and potassium developer, he had fallen back on the alkaline and pyro method. Some of Herr Wilde's dry plates were handed round at the meeting, and called forth a general opinion that their brownish-yellow tone must be of great advantage in copying.

At the next meeting—the last before the recess—held on the 5th of June, the chair being occupied by Herr BRASCH,

Herr H. JOOP, referring to the method of producing negatives on glass paper described by its inventor, Herr Kolk, at the former meeting of the Society, demurred to the statement then made that it was possible in that method to control by examination the progress of development. According to Herr Joop the image of the object to be taken is seen on the focussing plate, and afterwards on the sensitive glass paper, in all the brilliancy of colour of the original. But the blackening of the paper produced by the action of light is so far concealed by the colours of the image thrown by the objective that the eye is unable to observe and estimate the amount of alteration that has been effected.

Herr E. DUBY maintained that observation of the development of the image could be readily effected from time to time by holding a ground glass plate in front of the objective, which would prevent the formation of the optical image, and yet allow sufficient light to penetrate into the camera to allow of the existence and progress of the chemical image being controlled.

Herr Kolk also urged that the power of controlling the development of the image had never been put forward by him as an especial advantage of his process. The principal advantage that he claims lies in the ability to dispense with the development, and the consequent simplification of the manipulation.

A communication to the Society on the subject of two photographic novelties lately introduced to public notice was then

made by Herr E. DUBY, who in conjunction with Herr C. Suck had undertaken some experiments with these new processes. The first of these is a patented process by Herr F. Sandtner, of Tetschen, in Bohemia, for the production of negative plates on paper. It appears to consist in coating glass plates with white wax or paraffin, and then stretching on the coat tissue or tracing paper; on heating the plate, the paper absorbs the wax. By cleaning the back with spirit, and coating the edges with a varnish of shellac, the paper becomes a water and airtight support for the collodion film, which can then be treated in the usual way to obtain a photographic negative. The examiners, however, were unable to report very favourably of the process. They found that the collodion could with difficulty be made to flow over the wax paper surface, and that it left a wavy and cloudy film. It required considerably longer time to sensitise than an ordinary collodion plate, and inclined to repel the silver bath, so that when taken out of the bath it appeared as if covered with a number of minute oily drops. In developing, these defects manifested themselves to a much greater extent, and the plate appeared completely reticulated and ragged. Another inconvenience noticed by Herren Düby and Suck was the excessively long time required to dry by the plate and its coating of varnish. If, however, a plate could be obtained free from the first two defects, it had the advantage of giving a film which could with ease be drawn off the glass, and which is so thin that it could be copied from either side with equal sharpness. The second novelty on which Herren Düby and Suck reported is the collodion paper of Herr Raethel, in Flensburg; on this they had taken several prints which were submitted to the meeting. These prints exhibited several excellences, but also a great want of detail in the shadows. Pieces of the paper were distributed to the members present for subsequent trial.

PHOTOGRAPHIC SOCIETY OF FRANCE.

At the meeting of the 6th of June the chair was occupied by M. DAVANNE, President of the Council.

The only subject of interest brought forward, not alluded to in our French Correspondent's account of this meeting (see PHOTOGRAPHIC NEWS for 13th June, page 283), was an extract from M. L. Monck's treatise on "Printing in Fatty Inks," describing a method of purifying gelatine. This method is due to M. Stinde, and as it succeeds so well in the fatty ink processes, it is hoped it may be of equal efficacy for emulsions. The gelatine is cut into strips and put to soak in pure water, which must be two or three times changed at half-hour intervals. When swollen up and drained, it is placed in a water bath and heated till it dissolves. To each quarter litre of the solution is added the white of an egg diluted with twice its volume of water, and shaken up with five drops of ammonia; this mixture is then well whipped. Acetic acid diluted with 250 times its weight of water is then added drop by drop to the gelatinous liquid, beating it each time, until a piece of litmus paper dipped into it gradually turns red. The whole is then brought rapidly to the boiling point, stirring it all the time with a rod, and kept boiling for three minutes. The gelatine is then filtered through paper, care being taken to keep the filter hot, when the liquid ought to pass through quite clear. When this is completed, the gelatine is poured into china dishes, and allowed to set in a place free from dust; so soon as it quite dry it is cut into small pieces, and put to soak in distilled water for forty-eight hours, care being taken to change the water three or four times. After again drying, the gelatine is put away to be used as required. M. Leon Vidal and Dr. Van Monckhoven, in their works on carbon photography, both agree that fatty matters contained in the gelatine prevent the formation of smooth films, and the latter recommends that the gelatine should be purified by washing it in soda, and dialysing.

The next monthly meeting of the Society was held on the 4th July, M. PELIGOT, Member of the Institute, President of the Society, in the chair.

The SECRETARIES gave a resumé of the contents of the foreign journals. Among these was a communication made by Mr. J. D. Dames to the Pharmaceutical Society of Great Britain, on the action of chloroform as an antiseptic when added in small quantities to vegetable infusions. Mr. Dames thought that this discovery could be applied for the purpose of preserving solutions and organic substances which were liable to decomposition, and some of which are used in photography.

M. CHARDON, however, was of opinion that chloroform ought not to be added to sensitive preparations of silver, as, under conditions not yet understood, that substance produced an injurious effect.

Herr HUSNIK had recommended the Photographic Society of Vienna to use a solution of mercury bichloride in potassium iodide for intensifying negatives of line drawings. The negative is first of all taken by the wet process, using a collodion containing only iodides, and a bath of iron, to which some sugar has been added. According to the intensity of the negative thus obtained, recourse must be had to one of the following methods:—If the image is sufficiently vigorous, it is washed and fixed by sodium hyposulphite; but if the exposure has been too short, it must be intensified with pyrogallie acid before fixing. Sometimes a simple solution of mercury bichloride suffices for obtaining the required degree of intensity; but if still greater intensity be desired, a solution of the mercury bichloride in potassium iodide must be used. This solution is made by pouring one of potassium iodide into that of mercury bichloride until the red precipitate formed is re-dissolved. The method here described is really a very old one. In the year 1866 M. Ommegeanck had recommended the same solution, which was at that time known by the strange title of *Eau de Patoko*, with the addition, at the moment of using, of a few drops of gold chloride. Platinum chloride might in that case be substituted with advantage for the gold, as the former would not be liable to produce decomposition.

M. ROGER could not agree with Herr Husnik; he had never been able to obtain good results with mercury bichloride.

M. ANDRA drew the attention of the Society to a circumstance affecting the keeping of collodio-bromide emulsion which he had recently had occasion to observe. Of five or six bottles containing emulsion, made more than a year ago, he found two whose corks were completely eaten away by acid. On removing the remains of the corks, intense fumes of hyponitric acid were disengaged, and the emulsion was found to be in a viscous condition, like that of old pyroxyline hermetically sealed up in a bottle. The contents of the other bottles, prepared at the same time, some of which were corked and others stoppered, showed no signs of acid vapour.

M. PELIGOT thought that the decomposition might be due to the humidity of the cotton used for the collodion, and he recommended M. Andra to take one of the bottles which had not suffered change, to introduce a few drops of water, and then to observe whether the conditions of decomposition would not be promptly set up.

M. STEBBING mentioned an accident that had happened to some of his gelatine plates, which, after a heavy thunderstorm, were found to be covered with spots of mould, and were consequently spoiled; he inquired whether there was any means of avoiding the recurrence of this accident. M. Peligot believed that salicylic acid added in small doses might have the desired effect.

Mr. CHARDON communicated to the Society a method of preparing a substitute for ground glass plates by means of gelatine containing barium sulphate in a state of suspension. What he uses, in fact, is an emulsion of the salt in gelatine flowed over a glass plate. He employs two formulæ

- | | | | | | | |
|------|-----------------|-----|-----|-----|-----|------------|
| (1.) | Water | ... | ... | ... | ... | 100 c. c. |
| | Barium chloride | ... | ... | ... | ... | 6 grammes |
| | Gelatine | ... | ... | ... | ... | 5 " |
| (2.) | Water | ... | ... | ... | ... | 100 c. c. |
| | Sodium sulphate | ... | ... | ... | ... | 15 grammes |
| | Gelatine | ... | ... | ... | ... | 5 " |

In each case the salt is first dissolved in the water, then the gelatine is added and dissolved over the water bath. When the two solutions are complete, they are gradually mixed together and well shaken; by double decomposition the barium sulphate is obtained suspended in the gelatine in a state of fine sub-division. Before coating the glass plates with this emulsion it must be filtered. Previously to being coated, the plates must be washed and dried, and then laid for some time in a two-per cent. solution of tannin; they are then again washed and finally dried. As the gelatine sulphate of barium becomes more transparent in drying, it is necessary to ascertain by a previous trial what amount of the emulsion to use, and if the result should be that the layer is too mat, it can be rendered clean by varnishing it with amber dissolved in benzene.

M. LEON VIDAL described a contrivance of his own for enamelling the cameo of a photographic portrait while the rest of the mount is kept dull. He takes a glass plate on to which he

glues a piece of thin zinc plate corresponding in size and shape to the opening of the cameo press. All the surface of the plate left free is then roughened with emery, and the zinc is then removed; thus a plate clean at the centre and roughened at the sides is obtained. Such a plate is then used for gelatinising the prints, taking care that the oval or rectangle in which the portrait is taken shall coincide with the clear space on the glass. The effect thus produced is most satisfactory.

Talk in the Studio.

GELATINE.—Gelatin, it is said, has a peculiar action on gum; if gum be added to gelatin, and the mixture sensitized with ammoniacal potassium bichromate, the behaviour of the latter substance is very little altered by the addition of the former. Its solubility in hot water is somewhat increased, and to obtain the same degree of insolubility for the image as with pure gelatin the exposure must be longer. But if the mixture be acidulated with acetic acid, the film after exposure and desiccation is less soluble than one consisting of chromated gelatin only with acetic acid. Gum, therefore, renders an acid solution of gelatin less soluble, and the reason for this is believed to be that gluten and arabic acid form a compound solid only with difficulty. Borax thickens a gelatin solution, and the alkaline reaction of the same substance tends to render the chromated gelatin more insoluble. Calcium nitrate gives to gum an enormous power of adhesiveness.—*Scientific American.*

NEW FUEL AND LIGHTING.—The following extraordinary story, which reads much like a hoax, has been published by the *Athenæum*:—"A correspondent has sent us a startling letter from Miss M. Betham-Edwards, from which we give an extract:—"I send you the following particulars of a recent scientific invention, just patented, and destined, without doubt, to play a very important part in our economic history. I think it must be regarded as a solution for once and for all of the great coal question, or rather fuel question, not only among ourselves, but abroad. M. Bourbonnel, of Dijon, the celebrated lion and panther slayer, lighted upon the following discovery by hazard, and after six years' persistent investigation brought it to entire 'workable' perfection. He discovered, by means of two natural substances, inexhaustible in nature, the means of lighting and maintaining a fire *without wood or coal*; a fire instantaneously lighted and extinguished; a fire causing no dust, smoke, or trouble; a fire costing one-tenth at least of ordinary fuel; and, what is more wonderful still, a fire the portion of which answering to our fuel is everlasting, that is to say, would last a lifetime. M. Bourbonnel's invention comprehends both stove and fuel. The fires could be on the minutest scale or on the largest. They would be used for heating a baby's food or for roasting an ox. Being lighted instantaneously, they will be a great economy of time. M. Bourbonnel at once patented his invention, and a body of engineers and savants from Paris visited him and pronounced his discovery one of the most remarkable of the age. He has had several offers for the purchase of the patent in France, but wants to sell it in England, his own occupation being in another line. Any English gentleman or firm wishing to see his fires and stoves could do so by writing to him a day or two beforehand. His address is M. Bourbonnel, Dijon. . . . I have seen these fires and stoves. There is no mistake about the matter. It is as clear as possible that here we have a perpetual and economical source of fuel. Two hundred years ago the discoverer would have surely been burnt as a wizard."

To Correspondents.

OLDHAM & ANGLE.—Clean zinc clippings placed in an old fixing bath ought to precipitate the silver in a state of metallic powder. Why it has not done so in your case we cannot guess. Before wasting the clear solution you drew off, did you test it to see whether it contained silver? If from some cause—possibly the zinc not presenting a clean metallic surface—the silver was not precipitated, it would remain in the clear solution which had been thrown away.

REFINER.—Burn the cuttings slowly in a suitable vessel like an iron mortar. Then place the ashes in a crucible with an equal weight of a suitable flux, say carbonates of soda and potash in equal parts. Then apply a suitable heat.

FAUSTUS.—A correspondent with this signature sends us a long letter apparently for publication in our correspondence column. As it deals with an individual trouble rather than one of general photographic interest, we cannot with propriety occupy that space with its details. We will make some extracts and comments here. He wishes to ask whether there is any protection for assistants against studio managers who discharge them at a minute's notice on Saturday with the bare week's salary they have worked for. "Two or three years ago a certain youth, in reply to an advertisement in the *Telegraph*, appeared before a well-known photographer. The photographer seemed pleased, the youth was engaged, and received eight shillings per week, with the promise of an increase when he got accustomed to his duty. In course of time he did get accustomed to his duty, but did not receive the promised increase until he remarked that it was high time he had more salary. Consequently, he received one shilling more, and a good deal of abuse from the operator into the bargain. Things went on in this way until one unlucky day the father of this unfortunate youth departed this life, leaving a wife and six children to mourn his loss. The family was of course reduced to poverty, and the youth applied for another rise; he got one, a shilling and a shift to another branch, where he did all the drudgery and assisted the operator. However, he became a good retoucher. His employer, discovering this, by way of a little encouragement raised his salary to one pound sterling, and sent him about a hundred and twenty miles into the country under a highly intelligent business-like manager who was in blissful ignorance of the art. The youth stayed in this place nearly a year, and would have stayed longer, no doubt, had not that highly intelligent manager cut short his career at that establishment, by kicking him into the street one Saturday, with no money in his pocket but the week's salary he had worked for—and out of which he had to pay two weeks' rent and railway fare to London—all because he did not like the position in which he sat to retouch. Dear Mr. Editor, will you be kind enough to tell me through your journal whether that youth cannot claim another week's salary. He has applied three times to the head of the firm without avail." The case of our correspondent appears a hard one; but his grievance is in no wise essentially photographic, nor are we a fitting authority to decide it. According to law, a servant cannot be dismissed summarily without notice or wages in lieu of notice, unless he has been guilty of some sufficient fault, such as refusing to do his work or to obey his employer's reasonable commands. His only remedy is a legal one, to which we cannot help him.

J. JONES.—We do not know whether any of the artists to whom you refer will produce an enlargement from a print. If they do, it will necessarily cost more, and be less perfect, than if made from a negative; inasmuch as the print must be copied and a negative produced before an enlarged collodion transfer can be produced. Prices quoted doubtless refer to enlarging from a negative.

BACH.—You will find full details of the same or a similar process described by Mr. Pumphrey in our YEAR-BOOK for 1879 on p. 144.

B. B. L. asks if it is not a simpler and better plan to produce an enlargement on sensitive paper than to be at the trouble of producing an enlarged negative, especially if few copies are wanted. It is undoubtedly a simpler plan, but not nearly such an efficient one. An enlargement made on paper from a small negative is almost invariably a developed print, which is generally flat, sunken-looking, and dull compared with a print taken direct from a negative in the pressure frame. A sharper, more delicate, and more satisfactory enlargement can always be obtained by making an enlarged negative, and printing direct from that. Certainly the superiority of the print is worth taking the greater trouble.

M. L.—Skillfully managed, a Daguerrotype will yield an excellent copy. The portrait you describe will require cleaning first. Make a weak solution of cyanide of potassium, a piece the size of a hazel nut in half a pint of water. First see that the surface of the plate is not greasy, repelling the flow of water. This is very necessary, as it frequently happens that such portraits have been removed from their mounts and handled. If water do not flow freely over the surface, wash it with alcohol until it flow freely, then rinse thoroughly with water. Now treat it with the cyanide solution, and watch it carefully. As soon as the varnish stains are removed, place it under a tap, and let the water run freely, otherwise the cyanide may injure the image. Finish the rinsing with distilled water, and dry by applying the flame of a spirit lamp at the back of the plate. In copying, proceed as with an ordinary print, taking especial care to avoid reflections from the polished surface of the plate.

ECONOMIST.—The best use to which you can apply a very old sample of collodion which gives a rotten, powdery film, but is not very insensitive, is to mix a little with a new tough sample, which will be greatly improved by the addition.

CHROMATOPHILUS.—In our next. Several correspondents in our next.

The Photographic News, September 12, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY AND PHOTOGRAPHIC EQUIPMENTS IN WARFARE.

No better evidence of the importance with which the British Government regards photography as an aid to military science is afforded than that displayed in a recent publication giving a complete detail of warlike stores which has just been issued by the Secretary of State for war. It is entitled "Priced Vocabulary of Stores used in Her Majesty's Service," and to those interested in the matter we may mention that it is to be obtained of any bookseller for the sum of three shillings. For the most part, no doubt, it furnishes but sorry reading, but still there are many who like to know how much a big gun costs, or what is the price of the orthodox "gaiter-button." But photographers will certainly be interested in the portion appertaining to "Photographic Implements and Materials forming the Equipment of a Photographic Wagon." It must be borne in mind that modern armies are furnished with necessities and apparatus that were quite unknown to our forefathers, and a well-equipped force now-a-days carries with it the means for erecting telegraphs, surveying and making roads, printing and lithographing documents, mining and diving, laying down railroads and blowing them up, and last, if not least, the wherewithal to make photographs. Every army corps, which consists in the British army of some 36,000 of all ranks, is not complete unless it numbers among its *personnel* a sergeant-photographer and assistants, and among the *matériel* a photographic wagon and a very complete list of stores. To judge by the *Vocabulary*, this military photographic outfit is very sound and substantial, and calculated, therefore, to excite the envy of many a brother in the craft. That it is costly goes without saying, for only good apparatus and sound workmanship could be trusted to endure the vicissitudes of a campaign. To begin with, the photographic wagon itself, drawn by a pair of stout army horses, is an object to admire. It is entered by a door from behind, and, under ordinary circumstances, presents the appearance of a small and compact travelling office, provided with seats and well lighted. In these circumstances it fulfils all the conditions of an ordinary workroom, where prints can be toned and fixed, and trimmed and mounted without difficulty. To convert it into a dark room, it is only necessary to adjust the coloured glass windows and make use of a screen if necessary. There are shelves and cupboards, trays and stands proper to manipulation, to the storage of baths and chemicals, all made in the most substantial and durable manner. In fact, when we state that the price of the wagon complete is no less than £209, our readers will readily understand that a very perfect carriage must be at hand. We shall not go through the various items that are contained in this wagon, for, as we have said, anyone who desires the information can obtain it, and much more besides, for a few shillings. Still our readers will probably like to know what sort of apparatus and to what extent photography is employed in the army. In the way of cameras, for instance, we find the soldier-photographer is provided with three, two of which are capable of securing any size plate up to 12 by 10, while the third is a small hand camera provided for taking 7½ by 5 pictures. The camera-stands chosen by the War authorities are marked "Paget's Pattern," and these also are three in number. So that in case of accident the photographer has more than one string to his bow. Of collodion, the supply provided is ten pints of plain and ten of prepared, while of pyroxyline and alcohol and ether there are also certain quantities, to permit of further supplies of collodion being made. The lenses provided for service in the field are six in number, viz., a pair of stereoscopic lenses

for small rapid pictures, two rapid rectilinears of Dallmeyer for 12 by 10 and one for 7½ by 5 plates, and one wide-angle rectilinear, also of Dallmeyer, for 12 by 10 and 7½ by 5 pictures. A cone for copying is not forgotten, and of 12 by 10 plates "crown glass, thick, polished, the supply taken is a gross, and 7½ by 5, half as many. Besides the wagon itself, which can be employed as a dark-room, there is provided a box tent, "Ahney's pattern," together with a supply of tammy and fitments for the improvising of dark chambers. Of course provision is made for the employment of dry plates, and double backs for dry plate box are not forgotten. Three dipping baths, one of ebonite and two of glass, form part of the equipment, and eight large and eight small printing frames. A ream of albumenized paper is supposed to furnish sufficient material for printing, and the amount of nitrate of silver deemed sufficient is ten pounds. A copper still with condenser allows the soldier-photographer to make his own distilled water if he happens to fall short of that commodity, and altogether, as we have said, the equipment is of a most perfect character. Several such equipments are kept in the military stores ready for use at any moment, so that when war is declared no delay shall occur in providing photographic necessities. As to the uses to which photography may be put in the field, these have by no means been exhausted, albeit many Continental nations have availed themselves of the art. The first application of the camera in warfare dates from the Crimean war, when two young officers, Ensigns Brandon and Dawson, were sent out from England by Lord Panmure, after they had in the first instance received proper instruction from Mr. Mayall. Some of the work of these officers is still in existence, Mr. Mayall having presented several of the pictures which came into his hands to Mr. Baden Pritchard, of the General Photographic Establishment of the War Department. In the Franco-German war of 1870, both the Germans and French made use of photography in the field. The Prussians organised a corps of photographers under the command of a captain and lieutenant, and sent them to Strasburg, to help in the reduction of that fortress. Many valuable measurements and reconnoitring pictures were taken before Strasburg by the camera, and when that fortress fell the military photographers were transferred to the Paris lines of investment, there to perform further service. On the side of the French, apart from the invaluable aid photography rendered in producing microscopic despatches for transmission by pigeon to the besieged capital, photography in the hands of the French engineers did much good service. Plans and maps were prepared and copied by its agency, and indeed in the military topographical department of France the camera has for years past held a prominent position. The Commandant Laussedat was one of the earliest to foresee the valuable aid of photography in war, and it was under his auspices that M. Auguste Chavalier developed his invention, the *planchette photographique*. The photographic plane-table is still employed by the French War Department as a rapid means of surveying, and had it not been for M. Chevalier's premature death, there is no doubt that further applications of photography to warfare would have been forthcoming. The Emperor himself ordered that every facility should be given to M. Chevalier to carry out his experiments on a large scale at Vincennes, that gentlemen having pledged to obtain with the plane-table the following results: 1. By employing two proofs obtained with the instrument, to regulate in the most certain manner, during the night-time, the direction of fire against an enemy's works, as likewise the angle of reflection of the electric light to be used for illuminating the same; 2. In like manner to regulate the convergent fire of one or more batteries as well during the night as during the day. Our readers will thus see that photography and war are likely in the future to see a good deal of one another.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

[FROM OUR SPECIAL CORRESPONDENT.]

THE forty-seventh Annual Exhibition of the above Society commenced on Tuesday, September 2nd, and remained open during the week. At Falmouth it may almost be called a gala week, for the West visitors flock hither in thousands, and take a lively interest in its proceedings; and it is my opinion that a Society of this sort serves as a pattern for other societies. During the Exhibition occasional lectures are delivered in the evenings upon various subjects. Of late years the Photographic Department has been a very important feature, and many West country photographers avail themselves of being able to view the works of others without the long journey to town, which is a boon to many.

The Rev. Canon Rogers (of Grennock) gave the opening address, in the place of Professor Taylor, who was unavoidably absent through ill-health. The rev. gentleman spoke in high praise of the exhibits in the Photographic Department, mentioning several of the exhibits, especially those of Messrs. Wratten and Wainwright, also the platinum prints of Mr. Willis; he also referred to the charming productions of Mr. Andrew Pringle, and the Arctic photographs of Mr. A. J. Grant. Mr. Payne Jennings also came in for some very eulogistic remarks. He also called special attention to the new department connected with the photographic, and that was the Photographic Appliance Department, including the magic lantern, which might, he said, almost be termed a photographic instrument, as it generally exhibited photographic productions, and he hoped in future years to see more exhibits generally.

In the evening Mr. R. N. Worth, curator of the Society, gave a kind of lecture on the exhibits; he also alluded in very strong terms to the exhibits in the Photographic Department.

On the following evening Mr. W. Brooks gave some practical demonstrations of the gelatine dry plate process, also Willis's Platinotype process, which seemed to surprise many, to see the prints developed so rapidly one after the other; it seemed quite new to them. The emulsion process was illustrated by the use of a Sciopticon kind of lantern, an exhibit of Mr. J. Middleton, of London, which answered admirably, and seemed to delight the audience immensely. The whole of the experiments went off without the slightest difficulty on the part of the demonstrator, and without a single break for the space of two hours.

The exhibits generally in the Photographic Department were not so numerous this year, due, no doubt, to the general depression and bad weather that have been so prevalent of late; but it was the opinion, I believe, that the general excellence was far above the average. Portraiture fell very short. Mr. W. Gillard had the principal award for a portrait study taken direct on about a 20 by 16 plate, the award being a first bronze medal. The same artist had two other pictures, "Little Bo-Peep," which I did not like quite so well, the background being somewhat too light; his other picture, "The Little Washerwoman," was a fine production.

Mr. Payne Jennings' exhibits have been awarded a first silver medal. It would be superfluous on my part to attempt to say anything about them, his work being so well known.

Messrs. Hills and Saunders, of London, sent a frame of cabinet portraits of children. These were taken in one second in the studio on gelatine plates, and I think I may say that I have never seen their equal. To these was awarded a first bronze medal, and I should think if they could send some larger examples of their work they would obtain a higher award. I give this as my opinion only.

The exhibits of Mr. Willis' platinotype process were

admirable. In my walk round I heard several artists (painters) whom I knew express themselves in very high terms on the extreme delicacy and fine gradation. A second silver medal was awarded to the process.

The Oxford and Cambridge University Boat Race of 1879 were remarkable examples of instantaneous photography, and seemed to create very great interest on the part of the public. These obtained the Society's first silver medal.

Mr. B. Wyles, of Southport, sends some instantaneous (so-called) cattle. Many of them had moved, and were anything but good examples in any way. His studies of trees were very fair; but with more care in their manipulation, I should have liked them better. They were well chosen subjects, and I should like another year to see Mr. Wyles come forward with work that I know he is well capable of doing, which will be greatly benefited by attending to several little points.

Mr. Hazard shows some very fine examples of portraits taken at a fancy dress ball at night by the Luxograph apparatus, which are almost, if not quite, equal to daylight, and, by the judges' report, I find that they were unable to make an award to either him or the Luxograph Company, as they both exhibited prints from the same negatives in several instances.

Mr. F. Hollyer's rustic studies were very fine indeed.

Mr. Nesbit, of Bournemouth, contributed several nice things; but I think I have seen the same subjects some time ago, so need not make any remarks upon them.

Mr. Lenthall, of Reigate, contributes two very fine small interiors, cabinet size, taken on gelatine dry plates. They are fine examples—indeed, a second bronze medal is the award.

Mr. J. Terras has several productions possessing several good qualities.

Mr. H. G. Cocking, of Lee, Kent, sends a group of the members of the South London Photographic Society, an enlargement in carbon, for which a second bronze medal was awarded. He is not himself in the portraits he exhibits. I have seen others of his that I like much better.

A nice group of three ladies by Jas. Russel and Sons, of Worthing, has been awarded a second bronze medal. It is very soft and delicate, and one would never think the other exhibits were done by the same party. I myself think they show want of taste in forwarding such subjects for exhibition. The titles are very stupid, being three pet apes of the same subject, "Study of Expression." Grinning, they might do very well for a country fair for the horse collar business, and I consider them quite out of place at such an exhibition as this. I should advise them to keep a better class of picture.

Mr. J. Milman Brown, I am pleased to see, is again a contributor. I like his picture best, "A Country Road," being full of good feeling and effect.

The finest carbon work in the Exhibition is a frame of three portrait studies, two of them being the undraped figure of a child very artistically treated; a first bronze medal being awarded.

The exhibits of Mr. E. Baker, of Birmingham, are very creditable productions.

The Amateur Department is well represented. Mr. A. Pringle's exhibits are, in my estimation, the finest examples of landscape photography ever produced. R. M. Gordon, Esq., will find in him another Richard in the field: award, a second silver medal. Mr. T. M. Brownrigg sends some fine examples of his work. The photographs by Mr. Grant, being a series of the Arctic regions, has been awarded a second silver medal; they are very fine indeed. Mr. A. J. Daniel contributes some very meritorious productions; a little under-exposed if anything. Mr. Ferneley, of Reigate, has again some of his charming rustic studies, which are known so well. The transparencies of Mr. H. Manfield are very fine indeed; in fact, I have never seen so fine at any exhibition.

The Photographic Appliance Department is a new department, and contains several very interesting things. Mr. G. Hare, for his ingenious changing box, is awarded first bronze medal. The Malden Triplet Lantern, by J. Middleton, second silver medal for perfection of workmanship.

Mr. Keevil's Duplex Improved Lantern was awarded first bronze medal.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

MR. BROOKS' LECTURE ON PHOTOGRAPHY.

ON Wednesday evening there was a good average attendance of visitors to the exhibition of the Royal Cornwall Polytechnic Society at Falmouth. Mr. W. Brooks, of London, lectured on Wednesday evening on "Photography, Past and Present," to a large audience, numbers being unable to obtain admission to the room in which the lecture was given. Mr. George Lanyon, of Falmouth, presided, and snitably introduced the lecturer.

Mr. Brooks, who treated his subject in a pleasing conversational manner, remarked that as photography now made one of the main features of the Polytechnic Exhibition, he thought it might be of interest to try to explain to visitors some of the new processes in this art. Since he was there last, two years ago, important changes had taken place in photography; in fact, it had been almost revolutionised. Gelatine had been substituted for collodion, and by the use of gelatine, exposures were very much lessened. Mr. Brooks then traced the history of photography from its earliest days, dating as far back as 1722, to the present, and gave a retrospective glance at the different actions of light photographically as they were introduced to the world by various experimentalists. He especially eulogised the names of Wedgwood, Sir Humphrey Davy, Robert Hunt, and Scott Archer. Wedgwood received very valuable assistance from Davy in carrying out his experiments, and, indeed, photography would not be what it was at present but for Sir Humphrey and Robert Hunt, who might be said to have been the pioneers in photography. Archer introduced collodion in 1851, and it was strange to say that from that time until 1864 there was very little change in photography. In 1864 a very great discovery was made by Messrs. Bolton and Sayce, of Liverpool, and announced to the world in a paper read in September of that year to the Liverpool Photographic Society. This was the practical beginning of the emulsion process. The lecturer then performed numerous experiments, introducing mechanical appliances such as the changing box, and the spring, pneumatic, and electric shutters for exposing instantaneously. He also illustrated his lecture by making gelatine emulsion, and described it in detail, and gave further illustrations by the use of Mr. Middleton's excelsior lantern, by which he projected images on a screen. Of these the views of the Oxford and Cambridge boat race by Messrs. Wratten and Wainwright, of London, were especially noticeable, and were much admired. He likewise showed the dry plate changing box, a very ingenious instrument, the working of which was fully explained. After some remarks on the various printing processes, Mr. Brooks gave demonstrations of Willis's platinotype process, by which prints were developed in the presence of the audience. He pointed out the undoubted permanency of Willis's process as compared with silver prints, which were more or less injured by atmospheric influences; whereas prints by the platinum process endured the severest tests, even immersion in nitric acid, or the fumes of sulphuretted hydrogen. The lecturer next called attention to the numerous specimens of dry plate photography exhibited on the walls, and particularly called attention to the productions of Messrs. Wratten and Wainwright and Andrew Pringle, and the most perfect productions of portraiture of Mr. Alexander Cowan, and the firm of Messrs. Hills and Saunders, London.

The lecture throughout was listened to with much interest,

and the hearty applause that frequently greeted Mr. Brooks's experiments showed that his efforts were greatly appreciated.

In reply to the chairman, the lecturer said Mr. Willis, a native of St. Austell, was the inventor of the platinum process.

Mr. Harry Tilly moved, and Mr. Thomas Olver seconded, a hearty vote of thanks to Mr. Brooks, and both of them expressed the great pleasure it had given them to hear the interesting and instructive lecture that gentleman had delivered. The motion was carried by acclamation, and the proceedings terminated.

PRINTING WITH COLLODIO-CHLORIDE OF SILVER EMULSION.

IN compliance with the request of several readers, we reprint some formulæ and instructions for working with collodio-chloride of silver, no instructions having appeared for some time in our pages.

Mix three stock solutions—

No. 1.—Nitrate of silver	...	...	1 drachm
Distilled water	...	...	1 "
No. 2.—Chloride of strontium	...	...	64 grains
Alcohol	...	...	2 ounces
No. 3.—Citric acid	...	...	64 grains
Alcohol	...	...	2 ounces

Now to every two ounces of plain collodion add thirty drops of No. 1 solution, previously mixed with one drachm of alcohol; then one drachm of No. 2 solution gradually, shaking well at the same time; lastly, half a drachm of No. 3 solution. In a quarter of an hour it will be fit to use.

M. de Constant has found that prints are much improved if the sensitive paper or glass is fumed with ammonia; and Dr. Monckhoven points out that fuming prevents solarization or the formation of a light brown by over-printing.

OPAL GLASS.—Flashed patent plate answers best. It should not, under any circumstances, receive a preliminary coating of albumen, which is a source of fading.

Preparing the Plate.—The plate should be quite clean. We have found that running an edging of dilute albumen all round, and allowing it to dry before coating the plate, prevents the loss of the film in touting, fixing, &c. After the film of collodio-chloride has set, we finish drying before a bright fire, taking care that the thick edge where the plate was drained is quite dry, or the negative will be injured. The plate is left a few minutes to cool, and is then placed in the printing-frame.

Printing.—It is better to use one of the many printing-frames made for the purpose, which permit the progress of printing to be examined without risk of movement. The printing should be a little deeper than is required for albumenized paper.

Toning, Fixing, and Washing.—If the edging of dilute albumen have not been used, an edging of a solution of wax should now be run round the film, and this will prevent it slipping or becoming loose. An old and dilute acetate bath answers best; but any toning bath may be used, provided it is not too active, as in some cases the image tones in a few seconds to a slate colour, and is spoiled. It is generally important that the bath should be weak and old. A bath of hypo and gold also answers well. Fix in a solution of hypo three ounces to a pint of water. Five minutes' immersion is generally sufficient. Wash for five minutes under a tap. The prints should not be toned deeper than a warm brown or purple, as they lose no depth in the hypo, and are blacker after drying.

Collodio-Chloride made useful for Printing on Ivory.—No modification of the formula is required; a sample of collodio-chloride which works well on paper or opal glass will give admirable pictures on ivory. The prepared ivory is coated with collodio-chloride, and, when dry, is printed, toned, and

fixed in the same manner as a picture on opal glass. The film adheres with sufficient tenacity to render any edging of varnish unnecessary. A more perfect washing, to remove the hyposulphite, is necessary than with opal glass, because of the more absorbent character of the ivory.

We subjoin condensations of an article by Professor Krippendorff on collodio-chloride.

Professor Krippendorff describes his operations in the preparation of what he styles "Simpson type" paper as follows:—(1) Two grammes of nitrate of silver dissolved in two grammes of distilled water. (2) Half a gramme of chloride of calcium dissolved in eight grammes of alcohol (ten cubic centimetres). (3) Half a gramme of citric acid dissolved in eight grammes of alcohol.

Of solution No. 1, thirty-six drops are taken and added to thirty-four grammes of hot alcohol, together with one and a-half or two grammes of gun-cotton. After shaking the mixture, there are added thirty-six cubic centimetres of hot ether, agitation being again renewed until the final dissolution of the cotton. Before the collodion cools, four and a-half cubic centimetres of solution No. 2 are added during constant stirring, the mixture being kept in the dark room, and finally a like quantity of solution No. 3.

A quarter sheet of thin polished card or gelatinized paper is now bent at the margins to form a tray, and coated. Ordinary sized or gelatinized writing paper may also be successfully employed. It is stretched out to dry by means of pins or clips.

The printing is conducted in the same way as with albumenized paper, the deep black being allowed to bronze before the prints are withdrawn from the pressure frames. The tone of the pictures varies from violet to indigo blue, the former being due to papyroxyle, and the latter to ordinary pyroxyline. After printing, the pictures are placed in a washing bath; the water employed in this bath—which is simply common spring water—should be renewed every two or three minutes, as the prints will otherwise assume a yellowish tint, and become spoilt.

For toning and fixing, another set of three solutions must be prepared thus:—(1) Forty grammes of hyposulphite of soda dissolved in a dish containing one hundred and fifteen grammes of distilled water. (2) Two and a-half grammes of acetate of soda dissolved in fifty-five grammes of distilled water. (3) One gramme of chloride of gold dissolved in fifty grammes of distilled water.

Of solution No. 3, two and a-quarter cubic centimetres are put into a dish with solution No. 1, and afterwards solution No. 2, and in this mixture the pictures are laid in succession. They become, in the first instance, yellow, then brown, purple, red, and finally black. After half an hour the operation is finished, and the prints rinsed one by one, they being subsequently placed in a porcelain dish of water. By immersion in warm water the film may be removed and transferred to fresh paper which has not been in contact with hypo.

The best and simplest method of applying film to a second support is perhaps the following one:—The film is lifted from the water by means of a glass plate, and coated with a solution of gelatine (one part of gelatine in fifty parts of water); a sheet of fresh chalk or lithographic paper of the requisite size is then pressed upon the image, and a corner of the latter carefully lifted in contact with the paper, by which method the two surfaces may be perfectly brought together into contact. The picture is now dried between two pads of filter-paper, without, however, proceeding to press it in any other way; and to prevent any risk of tearing the film—an accident which easily happens—the surface may be coated with an application of positive varnish.

In regard to the value of Simpson type pictures, Professor Krippendorff sums up as follows:—Permanence, beauty, simplicity of preparation, are all on the side of these productions when compared with prints on albumenized paper. "In the first place," he observes, "the costly sensitizing bath is dispensed with, and, in like manner, the time-taking operation of silvering the albumenized surface; instead, the

paper is simply coated with collodion, the operator enjoying the palpable advantage of being able to prepare at one time sufficient sensitive material to last him for a week. There is also the saving effected by rendering unnecessary the tedious process of washing, and a continual flow of fresh water, which is invariably required in the manipulation of albumenized prints. The rapidity of production is another point to be duly considered, for it would be possible, in working the Simpson type, for customers from the provinces who come up to town for a few hours only to receive the same afternoon copies of the photographs taken in the morning. These advantages, together with the circumstances that transparencies are by the process easy of preparation, and that negatives may, in the same way, be multiplied, should certainly secure for the collodio-chloride method an increase of attention on the part of photographers."

Mr. George Bruce, of Dunse, who has been very successful in the use of commercial collodio-chloride paper, tones and fixes as follows:—No. 1. In fifty ounces of distilled water dissolve sulphocyanide of ammonium, one ounce two drachms, bicarbonate of soda, twenty grains. No. 2. In fifty ounces distilled water dissolve five or six tubes chloride of gold.

Fixing Bath.

Hyposulphite of soda ...	5 ounces
Distilled water ...	30 ounces

"To prepare a bath I measure out the quantity of gold solution necessary for toning the batch of prints on hand, put it into a bowl with plenty of powdered chalk; then take another basin with hot water; place in it the vessel with the gold solution, allowing it to remain (say) from ten to fifteen minutes, till the water and the solution are nearly of the same temperature. I then remove the gold solution, let it stand till it cools (or, if I am ready to tone, mix it with an equal quantity of the sulphocyanide of ammonium solution), and then filter. I fix in a strong solution of soda, keeping the prints in the bath from two to three and four minutes; by so doing I secure purer whites than I would get by fixing in a weaker bath."

AMATEUR PHOTOGRAPHY.

BY CAPTAIN ABNEY, F.R.S.*

Now as to where to go. The localities are infinite. "Bits" too insignificant (perhaps too difficult) for the sketcher are often gems for the photographer. Take two examples which we have before us. In the first, the day is evidently one of summer's best, and the student of nature has come across a wayside pond. The wind has blown the duckweed to one corner, and in the mirror-like surface the reflections of the trunk and branches of an ash are broken by a couple of cows which are cooling their limbs in the water, and seeking shade from a powerful sun. A rough-looking hedgerow, with its bottom of long grass and flowerets, helps to make the picture, whilst the round boulders immediately in front give the necessary force to the foreground. In the second we have an old cottage with its broken down gables and quaint lattice windows, and an octogenarian occupant has been made to "sit" naturally in the porch, forming a most suggestive picture. "Bits" such as these are to be met with close to London or any of our provincial towns, and many a spare afternoon has been spent by ourselves and other amateurs in a friendly art competition over them. If the amateur, however, should wish to make a more extended tour, there are many localities which will give exquisite subjects for the camera. Perhaps there are no two spots from which a more varied selection can be made than Lynmouth and Bettws-y-Coed. The Devonshire village is on the sea, and the cottages lining the road leading to the roughly-formed pier, with its tower head, form pictures from almost every point of view. By walking some

two miles inland, along the valley of the Lyn, the pedestrian plunges at once into the "waters meet," where numberless varieties of tree, rock, and fern are mirrored in the stream which runs through it. The Welsh valley is more extended, but the scenery is totally different. The ivy-clad bridges of the village, the river running between groups of magnificent trees, and the moss-coloured rocks that form part of its banks, are subjects on which an innumerable number of changes may be rung, whilst a ramble up the Lledr Valley will give him views of hill scenery which are almost unique for beauty in their combination of water, rock, distant mountains, and trees. It may safely be said that where there is a stream or a lake, there is an opening for photography. Killarney, the Cumberland lakes, the Thames, the Wye, are all localities in which a pleasing photograph is more than a probability, whilst if we journey up to Scotland, and can make our way to Loch Maree or Skye, we have scenery which is totally different in character to anything in England or Wales.

Now as to how to make the best of a picture. It is almost impossible to give rules in a short paper, and were they laid down, in all probability it would be found that the most successful pictures are made by those who know *when* and *how* to break through them. There is a certain amount of practice required in choosing a subject, for though we may look on the focussing screen of our camera and see upon it a view that in chiaroscuro seems perfect, yet when photographed it may prove unsatisfactory. The reason is that the photographer, besides observing the ordinary light and shade, has to translate the colours into blacks and whites. Thus dark green will come out black in the print of a photograph, whilst the blue sky will be nearly white; the yellow bracken and the blue-bell which, maybe, add such value to the foreground, will have a totally distinct effect where such translation is made. Hence it is that practice is required to obtain a photograph which shall prove entirely satisfactory to the artist.

Of all the baucs of photographers, however, the worst are the human race. Gentlemen in tall hats, ladies dressed in the height of fashion, or villagers who cannot stand still, will often mar a picture; but by a little persuasion they can generally be made subservient to the photographer, or at all events can be made non-obtrusive. We well remember one quiet village in Kent where we were photographing a "bit." The whole village put on their best garments, and asked us to take their likeness (price no object). Nothing would content them, but they must have their "likeness took." Luckily we had a friend with us who, after we had focussed the subject that we wished to take, skilfully grouped the Darbys and the Joans together in such a way that they were out of the field of view. When thus arranged we quietly uncapped our lens for some dozen seconds, and secured the picture on which our heart was set. A plate of doubtful character was then exposed on the village group, and the lens uncapped. A sitting of a couple of minutes cooled their eagerness; and when they wanted to see the "pictur," their wrath was unbounded on being told that ours were dry plates which had to be "brought out" at home. If one can secure, however, a real rustic, gracefully posed in a country scene, it adds much to the force of the picture. A golden rule to remember is this: either take a photograph of a landscape or of a figure; don't try to do both. If the one is to be the centre of interest, make the other entirely subservient to it; if you don't, the one will spoil the other.

Photographers, be they amateurs or not, are always to a certain extent looked down upon by the world at large, be it gentle or simple; and we cannot close without recording one incident which shows a remarkable and perhaps unique expression of the feelings of the population towards them. One day, near the Pyrenees, we were working at our "trade," on a hot and dusty day, dressed in a common blouse to save our more respectable garments beneath it. We had secured many good views (it was in the days of the old "wet" process), and whilst standing with our camera

over our shoulder, and mopping our forehead with a handkerchief held in hands apparently not too clean, an old peasant woman, who was trudging along the road with her grandchild toddling beside her, stopped in front of us and looked up and down at us. Pity, commiseration, or what you will, seized the heart of this dear old dame, and she put her hand into an old-fashioned pocket, which was well hidden beneath the short skirts of her dress, and pulled out a sou. She advanced to us, held out the coin (which in astonishment we took), muttered, "Pauvre garcon," and trudged along again. That sou we keep; it reminds us of a kindly French heart, and of the estimation in which the followers of the art are held even by the poorest.

PROFESSIONAL BEAUTIES' OCCUPATION GONE.

OUR brilliant contemporary, *Funny Folks*, who is generally in the secret of all political and social news much in advance of its contemporaries, says: "The Queen having signified that she regards with great disfavour the profession of the 'Fashionable Beauty,' it is possible that the pets of the camera will see fit to amend their ways, with the ensuing dramatic result:

ACT I.

SCENE—*Mrs. Langtry's Boudoir.* MRS. LANGTRY, MRS. WEST, MRS. WHEELER, and the COUNTESS OF DUDLEY discovered admiring their reflections in the mirrors which line the apartment.

MRS. LANGTRY. Horrid old creature! If she had eyes like mine, she would not be so ready to withdraw their photographed beams from the poor public.

MRS. WHEELER. No, indeed. It's quite too awful cruel! What will the wretched City clerk do, for example, when he has no longer my sweet nose to cheer him on to brighter days?

MRS. WEST. Your nose, indeed! What does he care about your nose? Unhappy creature! his real loss will be my "large and furry hat." That gone from the picture, he will inevitably perish in the snow-storm of existence.

COUNTESS. I suppose, however, that we do not mean to brave Royal displeasure?

THE OTHERS. Certainly not; and yet—and yot. (*Sighing deeply*). Poor, poor 'Arry.

[*With tears in their bright eyes, the lovely quartette pose themselves afresh as the act-drop descends.*]

ACT II.

SCENE—*Mr. Langtry's Smoking room.* MR. LANGTRY, MR. WEST, MR. WHEELER, and LORD DUDLEY discovered. *They lean on one another, and rub their hands.*

MR. LANGTRY. Well, this is jolly!

MR. WEST. Proper, and no mistake! Her gracious Majesty is a trump, and deserves the thanks of every married man in England. I say, Langtry, how many touting photographers have you kicked to-day?

MR. LANGTRY. Only two; but I smashed the apparatus of another into smithereens.

MR. WHEELER. I've—ha, ha, ha!—I've got the last one who called shut up in the coal cellar at the present moment.

LORD DUDLEY. First-class notion, that. Look here. I'll gladly stand you a hundred of Silkstones to shoot on the beggar's head—I will, bai Jove!

[*Hands over the money. Tableau—the four Husbands do a solemn saraband of joy and thankfulness round a brazier of their Wives' photos kindled in the largest spittoon.*]

ACT III.

SCENE—*The Strand.* 'ARRY, TEDDY, and BILL discovered gazing moodily into a Photographer's window.

'ARRY. Well, this 'ere is a flowery go, an' no error. Only the Bishop of Rumbfloo an' a bilin' o' common haectresses!

TEDDY (*darkly*). Wot's life without West? That's wot I wants to ask you.

BILL (*more darkly still*). Destruction or Dudley's my molter!

[*Teddy and Bill link arms, and move off towards the river with a dread purpose in their eyes.*]

'ARRY (*restraining them*). No, boys, it ain't come to that yet. Foreseeing this dread calamity, I purchased largely; and if you'll jest come along o' me to my drum, you can take your pick o' the latest—shillin' ones half a dollar, cabinets five bob.

[*All eagerly mount suburban 'bus as the curtain falls.*]

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THE POWDER PROCESS IN PRACTICE.

ONE of the most charming processes in photography, fascinating alike in practice and in results, is probably more neglected than any other branch of the art: we refer to the powder process. It is certain that some of the most charming sun pictures we have seen have been produced by this process. Its plasticity of application to different purposes is amazing; it is neither costly nor difficult; it is not hampered by patents or restrictions of any kind; it does not require costly apparatus; it permits more artistic control than any other process; and its results are permanent.

We have said it is not difficult, but it is fortunately not easy. It requires patience, perseverance, skill, and experience to secure perfect success. We rather rejoice when a process demands these qualities, as it guarantees the highest success to those most deserving of it. The powder process is not extensively practised, probably because few have given sufficient care to working to become familiar with its beauties.

The powder process is one of the oldest systems of permanent printing. As long ago as 1858, Messrs. Garnier and Salmon presented a paper to the French Photographic Society, describing a process in which paper treated with citrate of iron, and exposed under a cliché, then subsequently treated with a dark powder, produced a print. Citrate of iron, under the action of light, became hard and insoluble, whilst the portion protected from the action of light remained hygroscopic and tacky, so that a fine powder applied to its surface adhered in precisely the degree in which it had been protected from the action of light, so forming the shadows of the picture. Shortly afterwards the same gentlemen competed for the Duc de Luynes' prize with the process modified to something closely resembling the process practised at the present day. Instead of using the citrate of iron, they used a syrup made by dissolving thirty parts of white sugar in thirty parts of water, to this solution seven and a-half parts of bichromate of ammonia and ten parts of albumen being added. This formed the sensitive preparation. Shortly after this a process of producing enamels was patented in this country by M. Jobart, which was based on precisely the same principle; the powder consisting of ceranic colours, which were fired in a muffle, and burnt in. About ten years ago another similar process for paper prints was patented in this country by Mr. Window. The process has, in fact, been forgotten, and revived several times. A few years ago it was revived, and became a favourite process for use in multiplying negatives, to which purpose it was very successfully applied by Herr Obernetter, of Munich. Its adoption by Mr. Faulkner, who showed specimens of marvellous beauty in several recent

exhibitions, obtained for the process much admiration. Probably the most accomplished worker of the process at the present day is Mr. Cowan, of Porchester Terrace, who unerringly succeeds in securing perfect pictures, and, we believe, gives lessons in working the process.

We recently spent a few hours in the dark room of a distinguished London portraitist, watching the manipulation of this process, a few observations upon which may interest our readers. Various substances are available for the support of the picture, but nothing is better or more effectual than opal glass, ground and smoothed, but not polished. The glass in this stage, technically described as "smoothed," possesses a surface like dead unpolished marble. To clean it, a strip of cloth, rolled into a rubber, is dipped into a creamy mixture of chalk and water. The surface is well rubbed with this, and then well washed with clean water flowing from a tap. It is drained, but not dried, and is ready for coating with the sensitive syrup. This is poured on gently, so as to cause it to flow in an even wave over the plate, driving the water before it. The first coating applied is wasted when poured off the plate, as it takes with it the water. The second coating is then applied, and the surplus returned to the bottle. The coating is now dried by the aid of a bright, clear fire, or of the flame of a Bunsen gas burner. It is, when quite dry, and even warm, ready for exposure under a transparent positive. Mastery over correct exposure can only be gained by practice; for although a practised eye can detect the change in colour going forward, this cannot be much relied on. A similar judgment to that required in timing a negative must be used. About four or five minutes in the afternoon of a dull day were given, and proved just right. Under-exposure will produce a black, heavy picture; whilst slight over-exposure may be corrected, and made to yield a fine print by patient and careful development.

After exposure it is taken back to the dark room for development. The dark room should have a well-ventilated atmosphere, and have no draughts or currents of air. The dryness or hygroscopic condition of the atmosphere is of vital importance. If the air be exceedingly moist, or if currents of air holding moisture sweep through it, it becomes almost impossible to avoid patchy development; whilst if the air be absolutely dry, it is difficult to get the powder to adhere so as to develop at all. Familiarity with the conditions to be gained by practice is the only safe guide here. The plate is removed from the pressure-frame, and again thoroughly dried by heat. It is best to begin the development with the film quite dry, as a better estimate can be formed then of the exposure and the care required in development. The development is effected by the application to the film of the powder which is to form the image. For ordinary purposes it consists of ivory black and indian ink very finely powdered. The colours should be purchased of the artists' colourman as finely ground as possible, and then well ground together again in such proportions as may give the desired tint. Indian red may be used alone to give the tone of red chalk, or black alone to give the cold black of engravings; or sepia, or indeed any tint which may be desired. It is applied to the film gently with a large camel's hair brush. At this stage of the process very much rests under the control of the manipulator. Almost any depth in any part may be obtained by patient and continued application, so that the manipulator with artistic taste may materially modify the light and shade of the picture at will; whilst the careful, but mechanical, printer will produce an exact transcript of the negative. It must be borne in mind that depth is obtained by patient re-application rather than by any attempt to cause much powder to adhere at once. If the plate appear to have been over-exposed, so that the powder seems indisposed to adhere, there is a temptation to breathe upon the plate. This is a dangerous proceeding, and may cause the next application of powder to adhere in a patch. When our

friend's plates were too dry, he simply walked to a damper corner of the room, further from the Bunsen's burner, and moved the plate about in the air. The hygroscopic film quickly absorbed a little moisture, and the powder adhered satisfactorily. As each stage of the result is visible, it is not difficult to judge when the development is complete, or when a shadow requires a little deepening, or even, if desirable, light and shade introduced into a background which may be quite plain in the negative. Vignetting is also easily effected. When the image is complete, the next step is fixing it. As the nature of the fixing agent must depend to some extent on the colloid body employed in the sensitive syrup, we will say a few words on that subject before referring to fixing further.

In the first process of this kind, that of Garnier and Salmon, the syrup consisted of albumen and sugar and bichromate in water, and the images were fixed by immersion in a solution of sulphurous acid in water. M. Joubert used albumen, honey, bichromate of ammonia, and water, and his images were fixed by pouring on the film alcohol to each ounce of which three or four drops of strong nitric acid were added. In modern practice, the use of albumen has been generally abandoned, and the syrup is generally formed of gum-arabic and honey in water, or dextrine and glucose in water. Here is a formula for the latter:—

Water	...	...	...	1 ounce
Dextrine	...	...	...	24 grains
Grape sugar	...	...	...	24 "
Bichromate of potash	...	...	...	24 "

Here is another formula with gum:—

Water	...	...	...	6 ounces
Honey	...	...	...	1 drachm
Glucose	...	...	...	$\frac{1}{2}$ ounce
Gum-arabic...	...	...	...	$\frac{1}{4}$ "
Saturated solution of bichrom. ammou...	...	...	...	$1\frac{1}{4}$ "

Where albumen formed an important element in the syrup, alcohol and nitric acid, coagulating that substance, formed valuable fixing agents, whilst plenty of washing in water removed the unchanged chrome salt. Where, however, gum or dextrine are the chief binding elements, the same fixing agents are clearly of less value; nevertheless, they continue to be used. Some operators now, however, dispense with nitric acid, using, to an ounce of alcohol and water in equal parts, about half a dozen drops of sulphuric acid, which, being a good solvent of bichromate, rapidly aids in removing all the unchanged chrome salt. This is poured gently on the film, as at this stage it is tender, and is easily injured. Some use strong alcohol alone, and in subsequent washing add sulphuric acid to the water. After pouring off the fixing solution, the plate is very gently placed in a dish of water, which must be changed gently three or four times. The image is then dried by gentle heat. Care must be taken to keep white light from the image until all the bichromate is removed by washing.

If all the operations have been skillfully and carefully conducted, a fine picture, exceedingly delicate, yet with much vigour, is obtained, having a perfectly matt surface. Perhaps there is no form of photographic print which is so readily amenable to retouching, and is so much improved by very little work. The retouching consists as much in removal as addition. A few touches with an eraser, in making more pronounced an important light, or giving tenderness to a heavy shadow, are marvellous in effect. We commend our readers strongly to try the process, and let us know of their success.

GELATINE EMULSION FILMS SPLITTING.

WE do not think there is any good reason to fear the general destruction of gelatine negatives if produced and preserved with anything like adequate care. But every suggestion is worth consideration. Mr. Foxlee, in *Autotype Notes*, suggests a very careful washing to remove fixing

salts, alum, &c.; and, further, to ensure the absence of moisture before the films are varnished, he recommends immersing the plates in strong alcohol to displace water. "It is," he says, "a good plan, when the plate has apparently been thoroughly dried, to again immerse it in spirit just before applying the varnish. After the plate has drained for a few minutes, it will prove to be quite dry by the time it is warm enough to receive the varnish."

"By taking these precautions, we shall secure a film that contains no salts that can crystallize out, and thus split it up, neither moisture which might cause it to swell. All that now remains is to protect this film from the future action of damp. For this purpose a suitable varnish must be employed, otherwise all the care hitherto bestowed on the plate will be rendered abortive. Any varnish that is of a porous or brittle character, such as those that may be rubbed up for retouching upon, or such as are soft enough to be worked upon without preparation, should be avoided, as they are apt to allow moisture to permeate them. The kind of varnish that should be used is one that possesses the opposite characteristics to those I have just alluded to. It must be hard and impenetrable by moisture, yet withal, to a certain degree, elastic, so as to permit of any little expansion or contraction of the gelatine should any occur."

FRENCH CORRESPONDENCE.

STARCH EMULSIONS—ARTIFICIAL LIGHT IN PHOTOGRAPHY—METHOD OF BLANCHING AND RESTORING PHOTOGRAPHS THAT HAVE TURNED YELLOW WITH AGE.

Emulsions of Starch more Rapid than those of Gelatine.—I have received from Barcelona a paper entitled "Instantaneous Photography," by Messrs. J. Ferrars and J. Pauli, treating more especially of emulsions of gelatino-bromide of silver. On this particular branch of the subject the authors of the work in question only reproduce what has already been published in other places; but when they describe their experiments with an emulsion of potato starch they enter on entirely new ground; with this novel preparation they seem to have attained a rapidity exceeding anything yet experienced with gelatino-bromide. So far as my imperfect knowledge of Spanish (in which language the paper is written) enables me to understand, the process adopted by Messrs. Ferrars and Pauli is as follows:—

Potato starch	...	...	...	4 grammes
Water	...	...	...	20 cub. centim.

The starch is placed in a mortar with a few drops of water, and well triturated and beaten up until it assumes the form of a thick paste, with which the 20 c.c. of water are then thoroughly mixed. The object of the trituration is to crush the starch grains, and thus to enable the water to be completely incorporated with them, the result being a more homogeneous or smoother mixture. In another vessel, capable of standing heat, the following solution is prepared:—

Water	...	...	...	80 cub. centim.
Potassium bromide	...	...	...	1.12 grammes

This solution is raised to boiling point, and the first, or starchy, liquid is gradually dropped into it, keeping it, at the same time, vigorously stirred. As they swell, the grains of starch will be completely impregnated with the potassium bromide, and this is a most important condition in securing a good emulsion. Still keeping the mixture hot, the following solution is added drop by drop:—

Distilled water	...	...	...	20 cub. centim.
Silver nitrate	...	...	...	1.62 grammes

In order that the double decomposition may now be effected, shake the mixture energetically, and without cessation, until the operation appears to be completed, which will probably be at the end of eight or ten minutes. Next pour the emulsion on a glass plate, placed in a horizontal position, and so soon as it has set sufficiently, wash

it with pure water. Redissolving the paste, filtering, coating the plates, and drying are carried out as in the ordinary gelatino-bromide process. From the higher permeability of colloidal substances—such as starch, arrowroot, sago, &c.—the authors draw a conclusion highly favourable to the superior rapidity of emulsions formed of these substances. There is also, as they observe, a marked economy in the employment of starch emulsions, and to render them firmer and more capable of development they suggest a mixed emulsion of gelatine and starch. This new direction which has been laid open to the study and improvement of emulsions appears to me to be sufficiently important to be recorded; it certainly will be a great advance if we can succeed in increasing the rapidity of emulsions, and at the same time in decreasing their net cost.

Photography by Artificial Light.—It can scarcely be necessary to describe to the readers of the PHOTOGRAPHIC NEWS M. Vander Weyde's process of illuminating by the electric light. This inventor is better known in England than he is in France, and he carries out himself in London his processes, for which he has taken out patents, and of which your journal has already given full descriptions. It has been stated in your columns that M. Liebert has acquired the patent rights in France of the Vander Weyde system, and your readers have also learned that in order to establish those rights he has recently commenced against M. Pierre Petit an action, which is still pending (see PHOTOGRAPHIC NEWS for 27th June, page 302). Being anxious to observe for myself the working of this method of illumination, of which I am free to confess I had but an imperfect idea, M. Liebert courteously permitted me to inspect all the arrangements he has made for carrying it out, and I left his studio fully convinced of the importance of being able to apply artificial light to photographic work. I say specially, *artificial light*, to make my meaning as general as possible, without wishing in any way to undervalue the system of double reflection invented by M. Vander Weyde for effecting conveniently a dispersion of the rays from the electric lamp. When I was some time ago consulted as to the propriety of introducing this system of illumination, I expressed a belief that however great might be the advantage of artificial light under certain circumstances, I could not conceive it to be an essential requirement in a country where there is generally an abundance of solar illumination. At the time I had in my mind the south of France, Italy, and Spain. But now that I have had the opportunity of making myself personally acquainted with the subject, I feel that my former opinions must be to a certain extent modified. The employment of artificial light where the necessary expenses are sanctioned by a business on a sufficiently large and prosperous scale will, as I now believe, be one of the first conditions of important industrial success. In principle I have always been desirous that photography should be able to transform itself from a personal art, which it is at present, to a really industrial art. When it is no longer subject to a host of difficulties, and at the mercy of every passing whim; above all, when it is capable of being worked without reference to the time of day, or to the more or less feeble intensity of the solar rays, then it will assume that position of a grand art of which we are continually dreaming. The use of artificial light is a decided step in this direction, and what I more especially admire in the system of reflection adopted by M. Vander Weyde is the power not only of illuminating the object to be copied with greater softness, but also of graduating the light and modifying the arrangement of the shadows in a more rapid manner than by natural illumination. In talking the subject over with M. Liebert, I suggested that in order to avoid the somewhat dazzling glare produced by the whiteness of the large reflector, the white paper which covers it should be replaced by one of either a blue or a violet colour. I believe that by adopting this suggestion a softer light, and one which would be better supported by the sitter, would be maintained without losing rapidity. But this is

only a question of detail, which does not affect in the slightest degree the great principle of employing an artificial source of light. As has been already said, upon that principle depends the most effective means of organising a photographic atelier; and how great will be the superiority of one who is thus able to work in all weathers at any hours, and always in a fine full light, over those who have only the sun at their disposal—a sun so often veiled! For him there will be no occasion to fear either over- or under-exposure; the operator will have almost a mathematical knowledge of his light, and will be able to work with absolute certainty. And then if, instead of still having recourse to the ancient wet collodion, he will freely enter on the new path of progress, and take up dry gelatino-bromide plates, the average time of the exposure need not exceed one or two seconds. What an economy of time this will be! No more agonized sufferers, fixed in the rack, and tortured by the magic spell, "Don't move!" No more head-rests! No more restrained breathing, followed by the sigh of satisfaction, and the exclamation, "Thank Goodness, that's over!" And then there is the vexatious discovery that, after all, the gentleman or the lady *had* moved; and the trouble and annoyance when children have to be taken. All this will be changed under the new regime. Now, when we look around and see whether these improved appliances and processes have become common, we find they are not in more general use than Woodburytype or phototypic. And to the question why this should be so? I reply, it is because no popularization will ever be possible. What will happen will be the creation of a number of huge photographic establishments, furnished with all the means and appliances which characterise the industrial progress of this branch of applied science. The smaller photographic establishments will gradually die out. Photography itself, as an industrial art, will become a branch of printing, as engraving and lithography have already become. Has it not already made a step in this direction by giving rise to the creation of photo-zincographic workshops, which are nothing more than auxiliaries to typographic printing? And that, auxiliaries scarcely known, for the larger number of photo-typographic plates that we meet with in illustrated works bear no trace of their origin or of the method by which they have been executed. When once plates produced by phototypic are printed in the text, and simultaneously with the type, the same thing will happen: the great printing industry will entirely absorb photography to its own profit, and when that day arrives, our art will have arrived at the apogee of its valuable work. For these reasons I am led to rank the use of artificial light in photographic studios among the most important industrial improvements in photography—a light, that is to say, such as that used by M. Liebert for portrait taking, or as that applied by Messrs. Goupil and Co. and M. Dugardin to other branches of photography. Artificial light generally is still in a state of change; but for photographic purposes it promises to have an important application.

Method of Restoring Old Photographic Prints.—Pending the discovery of a means of introducing into albumen some substance which will prevent it from turning yellow (see PHOTOGRAPHIC NEWS for 1st August, page 361), it may be useful to know that a process exists by which this yellowness can be got rid of when it has made its appearance. I have tried the following method with satisfactory results:—Remove the print from its mount, and immerse it in a bath consisting of—

Filtered water	...	...	...	...	1,000 gr.
Saturated solution of mercury bichlorid in					
hydrochloric acid	...	...	...	...	20 drops

Leave the print in this bath until the required tone be restored, and wash freely. If the picture should fade, dip it in a bath of liquid ammonia diluted with water.

LEON VIDAL.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER II.

ON THE WING--NEW ACQUAINTANCES--THE AMATEUR'S
FIXING BATH.

MOST young men have a desire to go forth into the world and see fresh scenes, to cross oceans and become miniature Cooks and Columbuses, to climb mountains and sleep out at nights by the camp fire, and otherwise imitate the wanderers of the desert as if they were to the manner born. This Bohemian feeling was very strong upon me during my stay with Ballarat. When our sitters gasped for breath and wiped the streams of perspiration from their brows, when the sky was without a cloud, when the bath had to get sundry applications of ice, and the "new developer" had to give place to Bass's bitter, then did that restless feeling take possession of me—then did I want to go forth and wander over plains, climb rocks, stand on mountain tops, and, in short, breathe a more extensive atmosphere than the six-foot square of Ballarat's dark room. I do not know what might have been the upshot of these restless fits, if fortune had not seen fit to favour me by granting what I so devoutly wished for.

One bright morning a traveller dropped into Ballarat's, and in the course of conversation he exclaimed, "There's a nice chance for a couple of young fellows to see a bit about them just now; the noble Marquess B—and a few other nobs are about to do Iceland, and they want a first-class man and two assistants to go along and take views!"

I nearly dropped the negative I was varnishing in the hurry with which I turned round and exclaimed, "Assistants not engaged?"

"No," answered the traveller; "but the head man is, though. I know him well—a strange fellow that will not speak three words sometimes in a day—but a good operator for field work, and a straightforward man for all that. Why do you ask? Should you like to go?"

Should I like to go! Great heavens! I thought the man a lunatic to waste words in asking such a question. The blood was coursing through my veins with electric speed as, trembling with excitement, I rose and answered with the greatest unctious, "Shouldn't I?"

As I spoke the words my eye caught Ballarat's. There was such a pained look on his great face that my heart smote me, and I was on the point of qualifying my exclamation, when the traveller, producing his note-book, said, "Make your preparations at once; you shall have the job. Give me your address; I shall write to Gilbey at once, and you will hear from him the day after to-morrow, stating the terms and where you are to meet him."

It is impossible to describe my state of mind during the next two days: at one moment I was in the clouds with a glorious happiness in my heart, such as we experience only once or twice in life; and the next I was a prey to despair, as I thought that perhaps some more favoured mortal might have been before me, and secured the coveted situation. Ballarat, during those two days, was gruff and surly, plainly giving me to understand that he did not approve of the change. However, he behaved very friendly when I did get the situation (yes, I did get it!—that day is marked with a white stone, I can tell you!), and gave me a lot of useful advice about my baggage, and, what I thought more of at the time, an extra sovereign to help me on the way. He shook hands heartily, and hurried away to look after his business and his new developer, while I rushed off to the station. I recollect how nearly I lost the train. As I hurried along I passed a book-stall, and the tail of my eye (if eyes have such appendages) caught on the title page of a book; on that page was the magic word "Iceland." It would have been a sin not to have bought that book, and I would have been more than

mortal if I could have resisted the temptation of informing the shopman that I was on my way to that remote and mysterious island; this I informed him in an off-hand manner, as if such a journey was an everyday occurrence. The train was leaving the platform as I rushed up to it. "Hold him back!" "Let him alone!" shouted a number of people. Then I was pushed behind, and hauled in front, and finally got landed all right in a third-class compartment. I had no relations to see me off, and my friends were all at business, so that I felt pleased that my departure was not altogether unnoticed.

I had orders to join Mr. Gilbey at Ardrossan, a small seaport on the Firth of Clyde. I had to go by Glasgow, and in due course arrived at that busy city. I was rather startled just now when, upon looking over the notes of that famous journey, I found the following entry:—"Glasgow—huge masses of grimy houses, emitting volumes of smoke that will not disperse, and smells that assail the nostrils and sicken unto death; the inhabitants white-faced, wild in their talk, bewildered in their manners, their sole aim being to make enough of money to pay their passage to a purer atmosphere. Am thankful that my passage is paid."

It is evident that Glasgow did not awaken my admiration.

A hasty meal, and I was on the river. There were no saloon boats in those days—no princely *Jonas*. A penny paddle steamer of the earliest pattern was the means of transport then; and the passengers were packed with the tea and sugar, the tar and treacle, the whiskey and what-nots that comprised the miscellaneous cargo.

While I sat on a box of soap, alternately admiring the scenery, and listening to the awful sounds of a solemn piper who enlivened us with a few of his native pibrochs, my eyes lighted upon a young man intently devouring the pages of a book. Now, there was nothing to startle me in that—nor was there anything particular in the young man's personal appearance, except that he had large eyes, long hair, and fur on his coat collar and half way up his arms; but, nevertheless, I was startled—startled to see that the book he was so intent upon was a facsimile of the one I had bought.

Heaven! Here was a coincidence! A young man studying the history of Iceland! Surely I had not dropped my copy? No, it was safe in my pocket. My excitement was great—so great that I at once crossed the deck and entered into conversation with him.

In an instant the book disappeared in his pocket, and with remarkable volubility he commenced to talk—talk—talk. There was never such a fellow to talk. Although I was bursting to put some questions to him, it was a good half-hour before I had the ghost of a chance. At length he stopped to lick his lips, and I thrust in the question, "You have travelled far?"

"Should think so! When I was——"

"Know anything about Iceland?"

"Iceland?" he repeated, and giving me a wink that said plainly, 'You could not have come to a better party for information,' he cleared his throat, and started off. "A thousand years ago, the remote island of Iceland was colonized by successive swarms of Northmen, who fled thither from the Scandinavian mainland, in order to escape from the tyranny of their kings. They took with them cattle and ——"

He stopped short in his declamation here, and looked at me in surprise, for I had quietly produced my book of Iceland, and was calmly following the lines, as he spoke them, with my finger.

A hearty laugh, a hearty shake of our hands, and Tom Howie and I commenced a friendship that only ended with his death.

It is needless to say that he was the other assistant, and that, like myself, he was bound for the rendezvous at Ardrossan. I may here state that Tom was a thoroughly

kind-hearted fellow, a steady workman, and a clean manipulator: rather fond of fun, and the best hand at drawing the long bow that ever it was my fortune to meet with. This long bow practice of his was a sort of social intimacy or genial weakness; it never offended or hurt—it seemed, as it were, to spread a broad grin all round; it opened the eyes with wonder and chained the speech with delight; it pricked up the imagination, set it on a sunbeam, and tickled its ribs until it roared again.

It was on board of ship, and during the long stormy days we experienced in Iceland, that Tom's powers got thoroughly tried. As an instance, I may here introduce our third evening at sea. We had left the Orkneys in the afternoon, and were heading for the North Sea under easy sail. We were seated near the capstan among a lot of spars and ropes, enjoying a smoke (the Pentland Firth had cured us of our sea sickness), when the conversation turned upon the fixing of negatives.

"Cyanide for ever—nothing like it!" shouted Tom.

"Hypo!" was Gilbey's laconic defiance.

"How! Prefer that vile contaminating sloth to the clean working cyanide?" cried Tom.

"Yes," mumbled Gilbey, exhibiting his left hand, on which you could only count three fingers. "My forefinger was a clean piece of work, was it not? That was through cyanide. A friend of mine is buried at St. Leonards—the doctors said he had inhaled some poison—he fixed with cyanide! Very clean work! Hypo is the thing. Leaves the half-tones, gives a better printing colour to the film, and is harmless to the operator."

This was an awfully long speech for Gilbey to make, and Tom was rather struck with his logic. At last he cried, "But look at the washing!"

"Are we lazy?" asked Gilbey, elevating his eyes.

"No, by no manner of means," replied Tom; "but it is only good rules that work both ways, and I can prove to you that this one is at fault. Just the other day, when I was toiling away at old Carey's, who should drop in but an amateur—a mighty great swell, I can tell you—has dogs, and horses, and estates, and all manner of things; and after a few cursory remarks upon one thing or other, he says, 'Aha! you are going to photograph that lady. May I come in the dark room with you?' 'Certainly, my dear sir, with pleasure.' So accordingly everything went all right until I came to the finishing of the negative. 'What do you fix with—eh?' asked my friend. 'Cyanide of potassium,' I answered, as I dashed the liquid over the plate. He made some remarks at the time, but being engrossed with my negative, I did not note what they were about. Just as he was leaving he said, 'What strength do you use the cyanide?' 'Oh! about an ounce to a pint.' 'Oh! thank you,' quoth he. 'Good afternoon.' I thought no more about the young swell until next evening, when, just about the time we went to tone, he suddenly appeared in the doorway. His face was pale, his manner excited, and his voice trembled with emotion as he asked to be allowed to see us tone and fix our prints. With pleasure once more. I took him under my sheltering wing, and gave him as nice a lesson in washing and toning as ever anyone need wish for. But, to my astonishment, his excitement and emotion only increased. 'Now,' I cried, 'we come to the fixing.' 'You should have seen him start and change colour at that.' 'To-night we make a new fixing bath,' I continued, 'and you shall see how it is done.' 'Behold!' I cried, as I dived into the hypo barrel, and brought forth about half-a-pound; 'this is how we do it.'

"Good Gad!" shrieked the amateur, "you don't mean to say you use all that?"

"I do. Why?"

"Why, be—because I did not use the sixth part of that last night, and in less than two minutes all my nice—nice prints were out of sight." And the poor young man wept.

"Out of sight in less than two minutes?" I cried. "Impossible! What on earth did you fix them with?"

"Cy—cyanide—o—of potassium!" he added; "the same that you used in the dark room."

"Now, Mr. Gilbey," quoth Tom, "you see there is something rotten somewhere."

(To be continued.)

CORNWALL ROYAL POLYTECHNIC EXHIBITION.

JUDGES' REPORT ON PHOTOGRAPHY.

The judges of photography reported that although there is a slight falling off in the number of exhibits compared with last year's exhibition, they are exceedingly pleased with the high technical excellence displayed, especially in the new dry plate process, which seems to have come to the front during the past two or three years. The exhibits by the gelatine dry-plate process are most remarkable. Under the name of platinotype, a new printing process has been introduced, combining permanency with simplicity. The judges have great pleasure in congratulating the Society on the quality of the exhibits generally, if not on the number. Section 1 (Professional), for the best landscape in the exhibition, has been awarded to Mr. Payne Jennings a first silver medal, for English and Irish scenery, which, while possessing force and brilliancy, are extremely soft and delicate, and are of high artistic excellence. Messrs. Wratten and Wainwright are awarded a first silver medal for their instantaneous pictures, No. 625, of the University Boat Race, 1879, taken on gelatine emulsion plates. They are truly miraculous productions, and in two of the prints especially the river teems with life, and every wave is portrayed, and the judges consider them the most perfect examples of instantaneous photography ever exhibited. Mr. Willis, jun., exhibits some very fine examples of portraits and views printed by his new platinotype process, which are permanent. Platinum is here used in place of the fugitive silver compounds. A second silver medal has been awarded to the process. For a frame of interiors a second silver medal is awarded to Mr. R. C. Lenthall, of Reigate, taken by the gelatine process. They are very excellent productions. In interiors it is generally noticed that violent contrasts predominate, which is not the case here.

In the Portraiture Department the exhibits are very few, especially in large work. A first bronze medal has been awarded to Mr. W. Gillard for a portrait study taken direct, which possesses some very excellent qualities. Messrs. Hills and Saunders, of London, send a frame of particularly fine examples of cabinet size, studies of children. The judges consider them the finest examples of portraiture in the exhibition. As a rule, white draperies come out a meaningless white mass; but by the peculiarities of the gelatine process this defect is entirely overcome. A first bronze medal has been awarded to this exhibit. Mr E. Greaves has also been awarded a first bronze medal for his studies from life. A second bronze medal is given to Messrs. Russel and Sons for a very fine group by the gelatine process. For an enlarged group, printed in carbon, of the members of the South London Photographic Society, by Mr. H. G. Cocking, a second bronze medal has been awarded. The judges call special attention to some fine examples of portraiture taken at night by the Luxograph process, showing that a new sphere has been opened to this art. The specimens sent of a fancy dress ball are nearly, if not quite, equal to portraits taken by daylight. The judges regret that owing to some of the same pictures having been sent by two exhibitors they were unable to make an award. Mr. Baker, of Birmingham, sends some examples of cabinet portraiture which are very clear. Mr. H. G. Cocking also contributes three figure studies, but the judges do not think them quite up to his standard. Mr. Hollyer has some charming little artistic sketches of rustic life. Mr. J. Milman Brown is again a contributor and the judges are pleased to see an improvement in his work

a country road being the best. Mr. George Nesbitt exhibits some single figures studies which are very fine.

In Section 2 (Amateurs) Mr. W. J. A. Grant has sent some exceedingly fine photographs of the Arctic regions taken during the expedition of 1878, for which he had been given a second silver medal. The judges had taken into consideration the extreme difficulty in working of the Society's exhibition. Mr. George F. Powell's stereoscopic slides of ferns and flowers show merit. It is a pleasure to see Mr. Charles A. Ferneley helping the Society by exhibiting some delicately manipulated rustic studies, and the judges note that he has taken the hint given last year, and has added to the beauty of his productions by printing in skies. Mr. H. M. White's series of photo-ceramics are numerous and interesting.

Section 3. Photographic Appliances.—The exhibits of Mr. George Hare show wonderful ingenuity and excellent finish, and to the dry plate changing-box has been awarded a first bronze medal. Messrs. Avery and Co. send examples of material suitable for photographic backgrounds, which are highly commended. The duplex lecture lantern of Mr. H. Keevil shows some useful novelties. To it the judges have awarded a first bronze medal. Malden's triple lantern, by Mr. J. Middleton, of London, is a noble instrument, and shows several original points. It is in every way a most perfect instrument, and well deserves the second silver medal which it has gained.

Correspondence.

WASHING PRINTS.

SIR,—I send you a plan of a most efficient method of washing prints, which I have had in use for some years; it is thoroughly efficient, and, what is to the purpose, self-acting. Fig. 1, A, is an American pail, pierced with holes,

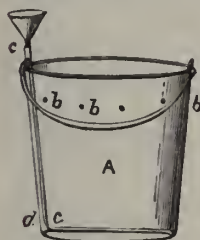


Fig. 1.



Fig. 2.

b b, about 4 inches from top. *c c* is a small white-metal gas piping, which is curved at the bottom of fig. 2, and is pierced with numerous small holes, which increase in size as they approach the end of the pipe at *c*. A small funnel placed in *c*, and a wooden cover, complete the arrangement. The prints being placed in the pail, the latter is placed under a tap, when the force of the water will be at once manifest by spurting to some distance above the top. When the water arrives at the holes *b*, the action of the pail resembles a running stream, for all the water enters at the bottom and conveys with it all impurities at the top; whereas in the ordinary method of pouring water on the top, the lower layers of water remain undistilled.

My method shortens the time for washing considerably, and I am satisfied that after one or two preliminary washings, four hours will render a large batch of prints perfectly safe.

The pail should be painted some days previously with some hard paint.—I am, yours obediently,

SOLOMON SMUDGE.

GELATINE FILMS HONEYCOMBING.

SIR,—I hope there are not many who are experienced in honeycombed films, a calamity that "B. S." has been overtaken by. You suggest "frilling"; but that is placed somewhat out of court by the peculiarity appearing as soon as they "begin to set."

I, for one, have never had such an unpleasant experience, although I was shown a short time back a batch of plates which were very seriously affected in that way, and I regret I did not examine them more closely. It appeared to me evident that the washed emulsion from which they had been coated had been so charged with a preservative or substance for perhaps producing insolubility as to cause on drying the same sort of cracked film that one sees occasionally in ancient pictures. It would have been difficult to have told, however, the cause without knowing details of the entire process by which the plates had been produced.

The same brittleness and cracking of the gelatine that might be supposed to follow a treatment of a large dose of acid previous to washing, or a want of adhesiveness which may follow an addition of glycerine to the finished emulsion, may not in any way resemble the honeycombing spoken of by "B. S.," especially if he has not been "doctoring" his gelatino-bromide by any such addition; and probably the mottling due to an excessive dose of alcohol might be easily mistaken for the graver fault, all of which is extremely difficult to surmise even, leave alone saying anything definite about it without seeing a plate, unless some one, also, may have been equally unfortunate as himself, and traced the cause. If "B. S." would send me a plate, or part of one, to the enclosed address, if I could divine the cause I should be happy to communicate it to him, and, in addition, he would satisfy a curiosity on my part to see the fault alluded to, as I know of no one personally who has experienced the same.—Yours faithfully,

CHARLES BENNETT.

South Lancing, Worthing, Sussex, September 10.

Proceedings of Societies.

BOLTON PHOTOGRAPHIC SOCIETY.

THE amateur photographers of this town have long felt the want of an association in which their particular "hobby" might be more freely discussed, and occupy a more prominent place than it can do under any existing association. On Thursday evening, Sept. 5th, an influential meeting of the local amateurs took place in the Reform Club, when, after a most interesting discussion, it was decided to form an association to be called the Bolton Photographic Society,—the meetings to be held the first Thursday in each month at the Bath's Assembly Rooms. The following officers were appointed:

President—Mr. Parkinson, Bolton Grammar School.

Secretary—Mr. John H. Galloway, Bolton Brass Works.

Treasurer—Mr. Wm. Banks, Optician, Corporation Street.

Council—Messrs. Shipperbottom, Rideont, Wigglesworth, Tonge, Dalton, and Grundy.

The Association commences with a membership of about thirty, and there is every promise of a most successful issue.

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

THE Board of Management of this Association held their usual monthly meeting on Wednesday, 3rd inst., at 160A, Aldersgate Street.

The minutes of the previous meeting were read and confirmed.

Mr. STRIVENS was then elected an ordinary member of the

Association, having been proposed by Mr. J. D. Fage, and seconded by Mr. J. D. O'Connor.

After other business of the Association was completed, the meeting adjourned until October 1st, at 8 p.m.

Talk in the Studio.

"SARONY IS DEAD.—No great general, or minister, or traveller, or diplomatist was Sarony; only a photographer. Yet Sarony was a genius of his time, and manipulated the secrets of his 'art' with a skill sufficient to land him at the head of his profession. His patrons were numerous enough to place him in command of capital, and with that essential to success he worked out his experiments. He lived to distribute the fruits of many triumphant theories, and to graft upon 'ideas' of his own the discoveries of his brethren in Broadway and in Paris. Scarborough, remarkable for many good things, became celebrated for Sarony's photographs, of which it may be said that they neutralised the popular defects incidental to our unemotional atmosphere."—*The Whitehall Review*.

THE OLDEST SCIENTIFIC LECTURER.—M. Chevreul, now in his ninety-third year, began his usual course of lectures on organic chemistry at the Museum of Natural History, Paris, on June 10th.

RETUCHING VARNISH.—A good retouching varnish is a boon to all retouchers, and those who are unfortunate enough to be plagued by too thin films will gladly hail a formula which promises this desideratum. In his recent work on retouching, M. Janssen, the *Photo. Correspondenz* says, recommends the following varnish:

Alcohol (sp. gr. 0.830)	60 parts
Sandarac	10 "
Camphor	2 "
Venetian turpentine	4 "
Oil of lavender	3 "

This varnish may also be used for paper pictures. The retoucher should not set to work as soon as the negative has been varnished, as the film will not then be hard enough to bear the touch of a lead pencil. The varnished film is in the best condition for retouching when a day old.—*Scientific American*.

GLOSS FOR PHOTOS.—The same gentleman also gives a formula (said to be used by Salomon, of Paris) for a cerate for giving a high gloss to albumenized pictures. The components are:

White wax	800 grammes
Elemi resin	10 "
Oil of lavender	300 "
Benzoin resin	200 "
Oil of spikenard	15 "

THE ALLEGED DISCOVERY OF A NEW SOURCE OF LIGHT AND HEAT.—The alleged discoverer of the new source of light and heat to which we recently referred, writes to the English press as follows:—"Monsieur,—Je viens de lire dans votre estimable journal un article qui traite mon invention de canard. Cela ne me surprend pas. Monsieur, votre grand-père il y a cent ans aurait pu être traité de fou s'il avait dit que l'on pourrait bientôt courir quarante voitures à la fois, et sans chevaux, ce que font nos chemin de fer aujourd'hui. Ne vous en déplaîse, Monsieur, mon invention n'est pas un canard, et je prétends qu'aux moyens de mon invention on chauffera un bateau à vapeur aussi bien qu'une tasse de café. Veuillez, Monsieur, me faire l'honneur d'une visite, et vous serez convaincus de la vérité.—Recevez, Monsieur, mes salutations empressées, C. BOMBONNEL, à Dijon.

To Correspondents.

SOUTH DEVON.—We do not know with certainty. Try any of the photographic dealers. Or cover a white one with crimson paper, or varnish with a ruby varnish.

A. B. C.—As a rule, a good negative which has been developed simply, and not intensified or redeveloped, is best for the purpose of the retoucher, and gives most scope for skill in retouching, as lights can be put in and detail brought out with more force by the retoucher's pencil.

W. W. FREE.—An alkaline developer will best bring up your underexposed dry plates by the coffee process. Or you may bring out detail by using a plain pyro developer, and obtain density then with pyro acid and silver. 2. Much depends on the position of the studio; if it stand in an open position accessible to sunshine, corrugated glass will serve for the roof, but not for the north side-light.

A. A. G.—With the camera you propose to get you will be able to enlarge to 12 by 10 inches with your small Voightlander. In calculating for enlargements it is necessary to know the equivalent focus of the lens, which is not the same as the back focus. If your lens give an image the same size when the camera is extended ten inches, the equivalent focus of the lens is about five inches. The amount of extension of camera is not difficult to calculate. To produce a copy the same size requires an extension of double the equivalent focus; for twice the size, an extension of three times the equivalent focus; for thrice the size, four times the equivalent focus. So with any number of times of enlargement, the extension must be once more than that number of times the equivalent focus. In some of our back YEAR-BOOKS you will find tables giving all the details for many sizes.

W. GERMANUS SHAW.—The letter was duly addressed and posted.

ROBIN.—The reason of the film splitting up when transferred to the surface of a metal arises, we presume, from the collodion being contractile, and when it is transferred to the metal surface it is not in a state of perfect and adhesive contact with the metal, hence it splits when it dries, and contracts. Possibly a less tough and contractile collodion would give better results. We do not see how a collodion image on metal is to be made useful for engraving.

J. G.—Shellac dissolved in methylated spirit makes a very good varnish. Castor oil, at the rate of four or five drops to the ounce, makes it more tough and elastic, and less friable. But we recommend the purchase of a good negative varnish. Amateur varnish making is risky and troublesome.

J. L.—For most commercial samples of albumenized paper a forty-grain silver bath answers well.

NEMO.—Place a folded sheet of blotting-paper which has been immersed in a strong solution of carbonate of soda, and dried, at the back of the sensitive paper in the pressure-frame. This will prevent discolouration during long printing.

STAINER.—A relief like that used in the Woodbury printing process would give by pressure such printing as you desire, scarcely to be seen by reflected light, but transparent by transmitted light.

CHROMATOPHILUS.—A carbon print transferred to plain paper would give the result you desire, a glossy image on a matt surface, the lights being quite a dead white.

PLAIN ENGLISH.—The formation of a Company in this country to manufacture a style of goods hitherto manufactured on the Continent, and imported into this country, may without any impropriety assume the name of an "English" company, even if it engage foreign workmen to make sure of the style not being lost or modified. Hence a letter commenting unfavourably on such points is not suitable to our columns.

Several correspondents in our next.

PATENTS.

COMPILED BY MR. F. DES VREUX,

Patent, Trade Marks, and Designs Agent, 32, Southampton Buildings, Chancery Lane, London.

NO. 3541. FRANK WIRTH, of Frankfort-on-the-Main, Germany. "Improvements in apparatus for holding photographs and showing the same." A communication from Friedrich Wilhelm Schwary, a person resident at Offenbach-on-the-Main, Germany. Dated 3rd September, 1879.

PHOTOGRAPHS REGISTERED.

MESSES. MACLARDY & CROGAN, Wrexham,

Photograph of the Study at Hawarden Castle.

Mr. HAMMOND, Ripon,

Photograph of Dean of Ripon, Rev. W. F. Freemantle, D.D.

Mr. SUTER, Cheltenham,

Photograph of Rev. J. R. Hughes.

Photograph of Rev. H. Shaw.

The Photographic News, September 19, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

CAN THE CAMERA BE EMPLOYED IN CONNECTION WITH MANCE'S HELIOGRAPH?—PHOTOGRAPHY IN COLOURS.

Can the Camera be Employed in connection with Mance's Helio-graph?—Sunshine signals are again to the fore, and the heliograph is to play a more important part than ever in warfare. The Shutargardan Pass, which has already been occupied by British troops in a second advance towards Cabul, is distant from the Afghan capital but fifty-five miles, and General Roberts will seek, therefore, to establish a light-signalling station on the Pass in order to be able to communicate with his base when he has reached Cabul. The Shutargardan stands above eleven thousand feet, so that there will be no difficulty in flashing light-signals thence into the plain. It is a pity that Mr. Mance, to whom is due the credit of constructing the heliograph, did not choose some other name for his invention when he submitted it to Government in 1869. Heliographs and helio-gravure were words in common use by photographic investigators thirty years previously, for we had heliographs before we had Daguerreotypes. Nicéphore Niepce, in his early experiments, employed the words, and we saw in the last Paris Exhibition a specimen of helio-gravure produced by that early pioneer in 1824. Again, we usually, although not always, employ the terminal "graph" to something which records, and has connection with the graphic arts. In the Mance heliograph the signals are simply seen, and not recorded. A person looking afar sees a succession of star-like flashes that sometimes last for several seconds, and sometimes appear only for a moment. They are long signals and short signals transmitted by the heliograph, and an alphabet is used which consists of these long and short signals. This alphabet is based upon the Morse system, and a well-practised signaller can spell through a message from these flashes at the rate of from ten to twelve words a minute. But it would be better still if an instrument could be employed instead of a man to receive the signals, since nothing could escape an automatic machine, while at the same time the signals would be written down, and would be referred to afterwards. In this case we should have a real heliograph, and we cannot see why such an improvement could not be effected with the aid of photography. In the Morse alphabet, as adopted in the telegraph service, a short signal and long signal are written down in the form of short lines and long lines. A short line followed by a long line mean A, just as a man seeing a short flash followed by a longer one would know that the signaller mean to indicate A. A long signal followed by three short ones signify B, a short signal by itself is E, and a long one T. Now it would be a very easy matter to convert a light shining for a brief time into a short stroke, and a light shining for a longer time into a long stroke, with the aid of a camera and a movable sensitive film. Our camera is of elongated shape, something like a telescope, and this camera is directed in such a way that when the signaller at a distant station shows a light, this light is thrown upon the focussing screen or sensitive plate in the form of a star. If the sensitive plate is moving along gradually at a certain fixed rate—we will say three inches per minute—it stands to reason that the star shining for three or four seconds will mark a line of some length upon the plate. If the star of four seconds' duration is followed by another of only one second, we shall have a short line produced on the moving plate immediately following the long mark. In other words, we should have written down upon the plate a long line and a short line, and this, according to the Morse code, would signify N. By having recourse to a camera in this fashion, you would not only enjoy the advantage of written signals that might be

read afterwards, but it would be possible to signal much faster, for the receiver, instead of requiring time to puzzle over the message as it was transmitted, need pay no attention until the complete sentence was before him. No doubt there would be certain practical difficulties to be overcome in adapting the camera to the heliograph, but applications of a like nature are practised every day by scientific men. The Mance heliograph as now used is a very simple contrivance, and as photographers are interested in all that pertains to light, they might like to know how the apparatus is worked. It consists simply of a tripod, upon which stands a mirror. This mirror is usually ten or twelve inches in diameter, and a glass of this size is capable of reflecting a ray visible to the naked eye at a distance of fifty miles, and even more in clear weather. The mirror is movable, swinging like an ordinary toilet looking-glass, but it has, moreover, a pivot at top and bottom that permits it also to be turned sideways. In this way it is possible, whenever the sun shines, to reflect a ray in any direction, unless it should happen that the sun is too far behind, when the difficulty is at once obviated by bringing into play a second mirror, which reflects the rays on to the first. But if the distance to be signalled is fifty miles off, it is necessary that the signaller should aim perfectly straight, and to do this he handles his mirror after the manner of a rifle. He gets behind it, and looks through a hole in the centre (where the quicksilver has been removed), and having sighted the station afar off, he brings up in a line with his eye and the station a small stud that slides on a sighting rod, some ten yards in front of the mirror. When this stud covers the distant station, the aim of the mirror is correct, and all the signaller has to do is to see that the reflection of his mirror shines upon the stud. So long as this is the case he may be sure his brother afar off will see the reflection too. A key to be pressed by the hand is in connection with the mirror, and throws the reflection on and off the stud, and by pressing this key for short or long intervals, short or long flashes are produced. This is the whole story of the heliograph; and now that our readers have learnt its *modus operandi*, we hope some of them will set to work and apply a camera to it in such a way that the flashes may be recorded and true light impressions produced by its means.

Photography in Colours.—Captain Abney's interesting results in connection with the production of colours in the photographic film, to which he called the attention of the Royal Society a little while ago, recalls to mind the series of coloured pictures which Madame Niepce de St. Victor exhibited a few years ago at the Photographic Society. Captain Abney, we believe, has photographed in a tolerably complete manner, the spectrum (we have not, by the way, yet seen his results), while the series of coloured pictures produced by Niepce de St. Victor were reproductions of coloured dolls, Becquerel, it may be remembered, having previously secured a picture of a parrot in colours. The Niepce de St. Victor series, which we inspected no less than seven years after they had been produced, were upon thin metal plates that bore a striking resemblance to the so-called American alba-plates of to-day. The models were dolls dressed in coloured raiment, and in the photograph these colours were distinctly portrayed. We suppose there were not less than fifty coloured pictures in the series we saw. In all probability very long exposures had been given in bright sunlight, and there is little doubt that they were produced by the violet sub-chloride of silver. The fact that none of the pictures exhibited pure whites bore out this impression. The plates were of course preserved in the dark, and only looked at in subdued light.

THE TIMES ON AUTOTYPES.

An interesting article appeared in a recent issue of the *Times*, devoted to a review of some autotype reproductions of paintings. The writer says:—

"On a former occasion at some considerable length, and more recently in various articles upon the progress of photography, we have made mention of the class of works called autotypes; but these, in the peculiar sense in which they have been rendered absolute reproductions of everything which is characteristic of the artist's hand in a drawing, or even in an oil-painting, will fairly admit of a more detailed notice than has yet been given to them. An engraving, however skilfully executed, is at best but a copy of a painter's work by some one else, and is thus deprived of that strictly personal element which is so important in every form of art; while in the case of autotypes the original may almost be said to copy itself, and the copies may certainly be said to reproduce with entire fidelity everything that is characteristic of the original. The work of the brush is, indeed, not so much copied as multiplied; and hence many painters of repute—notably Sir F. Leighton, Mr. Poynter, Mr. Elmore, Mr. George Earl, and others—are intrusting their pictures to the Autotype Company rather than to the engraver for the supply of the copies demanded by the public.

"A finished autotype is a sun-picture printed permanently in carbon or other imperishable pigment; and it is obtained in the following manner:—A sheet of paper is covered with a film of gelatine, with which the pigment and a certain proportion of bichromate of potash have been mixed, and this film is dried for use. The gelatine is naturally highly soluble in water, but the effect of the addition of bichromate of potash is to confer upon it the property of becoming insoluble as a consequence of exposure to the action of light. The result is that when, after a sufficient period of exposure under a negative, the prepared sheet is placed in a warm bath, the parts upon which light has fallen remain, while those upon which light has not fallen are readily washed away. Hence the transparent parts of the negative become the dark parts of the print and *vice versa*; while the dark parts, being dependent for their colour upon carbon, or upon some equally permanent material, and not upon the comparatively unstable metallic oxides of ordinary photography, are as imperishable as work done in printer's ink. An autotype is, therefore, calculated to be in all respects as enduring as an engraving.

"A satisfactory photographic copy of an ordinary painting is an obvious impossibility, because different periods of exposure would be required in order that the different colours of the surface might influence the sensitive film in the same degree, and hence every photograph of such a painting presents faulty lights and shadows. The reproduction of a picture by the autotype process requires the co-operation of the painter with the photographer, and is effected in the following manner:—In the first place, a negative is taken directly from the picture, and from this negative a transparency is printed, which, when it is held up to the light, gives the best result which can be obtained by direct photography in the particular instance. From this transparency, placed in a suitable position, a second and enlarged negative is made, the size of which depends somewhat upon the style of work affected by the artist. From this enlarged negative a print in pigment is taken, which may be upon almost any material at the pleasure of the artist, such as rough or smooth paper, canvas, or panel; and upon this print he works in monochrome, correcting all that is faulty in the lights and shadows, and reproducing his picture himself upon the lines of the photographic copy. In doing this he may be guided by having a duplicate of the original print, to show the extent of his alterations; and he may have fresh copies taken as often as he pleases, to show the effect which his brush work will produce when copied by the camera. When the monochrome picture is completed to his satisfaction, it serves as an original, from which a negative of any size smaller than itself can be taken in a camera, and from this negative any number of permanent autotype copies can be printed in the ordinary manner.

"There are certain differences of opinion among artists with regard to the method in which the picture in mono-

chrome should be produced. There are some who think that the best method is to work with the brush either in oil or in water-colour, and to depend for effect purely upon gradation. There are others, and some of them with special photographic knowledge, who prefer to proceed by dot and line, or by a mixture of both; and in this case to make the monochrome of at least double the dimensions—that is, of four times the area—which will be required in the print to be reproduced. The reduction in size has, of course, a condensing influence upon the handling, and brings it down so as to produce practically almost the same effect as the gradation of tint. There can be little doubt that the former of these methods is the best, if the artist will take the necessary pains; but the latter produces a tolerable result with less expenditure of labour. An excellent example of the former is afforded by the autotype reproduction of Mr. Richard Elmore's well-known painting of 'Windsor Castle at Sunrise.' The original picture was about 7ft. by 4ft., and the direct copy was about 4ft. by 2ft. 4in. This print, developed on paper and mounted on a canvas support, gave Mr. Elmore the whole of the drawing and composition of the original, and enabled him, without too great an expenditure of time, to modify the light and shade to the required extent, so as to obtain a perfect copy, itself the work of his own hands. To this end, he painted upon the print in oil colour, and was furnished with occasional copies during the process, so as to assist in guiding him to a correct appreciation of the value of his gradations of tint from a photographic point of view. The ultimate result is a finished autotype, which places before the eye the touch and expression of the artist in a manner which it would be hopeless to expect from an engraving, and which has the collateral advantage of being of much smaller cost. Every mark of brush work is displayed with fidelity, and the points where the painter has massed colour for the production of his effects are so truly rendered that it is at first sight difficult to believe in the level character of the surface. The autotype is published in two sizes, respectively about 32in. by 19in. and about 19in. by 12in., both signed by the artist as evidence of his approval. It is also published in two colours—in black and white and in sepia; and the sepia copies, if closely framed, might be mistaken for original drawings by even a very close observer. Moreover, the autotypes have the advantage of being all alike. No injury is done to the negative in the process of printing, and hence the last copies will be as good as the first. It might in some cases be desirable to limit by agreement the number of copies to be produced; but an artist whose work is popularized in this manner is at least spared the sight of those melancholy impressions from old plates worn to the bones and carelessly retouched, which give so poor a notion of the originals from which they were derived. In the autotypes of Mr. Elmore's picture there is a subtle blending of light and shade, and a perfection of pictorial effect, which must be seen to be appreciated.

"An illustration of the alternative manner of working is afforded by the reproductions of Messrs. Hlopkins and Mavell's picture of Her Majesty's buckhounds, some of the copies of which have been coloured by hand to imitate the original. In these, of course, the original method of producing the monochrome is completely disguised; but in the uncoloured copies, as in those of all pictures produced in a similar manner, there is less appearance of personality than when the more laborious plan has been pursued.

(To be continued.)

PHOTOGRAPHY IN NATURAL COLOURS.

A CORRESPONDENT of the *English Mechanic*, referring to a notice of Captain Abney's recent experiments which had appeared in that journal, says:—

"In a recent number of the *English Mechanic* it was announced that Captain Abney, the well-known photo-

graphic scientist, had actually succeeded in photographing the spectrum in its natural colours, and as this chromo-photography has always been a favourite study of mine, I venture to lay before my readers a few theories concerning the probabilities of its future development, and will endeavour to show the possibility of taking photographic pictures from nature in their appropriate colours. Distinctive colouring, one of the essential properties of matter, has hitherto been considered as an occult chemical property, the colour of a substance being explained by stating that the substance possessed an absorbing affinity for luminous rays of a certain period of vibration, or wave-length, and after abstracting those from the white light which fell upon it, reflected the residue to the eye. This hypothesis is, however, necessarily very unsatisfactory, as it involves an unknown principle to account for the absorption. When we consider that every known substance possesses a colour or tint so peculiarly and distinctively its own that it is possible, by the use of the spectroscope, to detect the presence of the substance in a compound, it would seem that nothing short of nebulous matter, from which all substances have origin, would collectively supply their exact tints, we are forced to admit that, according to the absorption theory, colour photography, if not an impossibility, is at least an improbability.

"In my opinion, however, the present extent of research not only does not justify us in adopting the absorption theory, but even points conclusively to the truth of a theory which I am about to elucidate, and which depends solely upon known and acknowledged principles. In every case where physical conditions have enabled us to obtain bodies, no matter how opaque in bulk, in a state of extremely fine division, they have been found to be more or less translucent or even transparent. The obvious deduction to be drawn from this is that the ultimate particles of matter are transparent, the opacity and colour when in bulk being dependent on the size of the particles or molecules, and the aggregate number in the direct line of vision. Now, the only ways in which man has yet been able to create or alter colour have been—1st. By coating a substance with a layer of film of another substance possessing inherently a different colour. 2nd. By chemically altering the arrangement or size of the ultimate particles or molecules of a body. 3rd. By regulating the thickness of extremely fine films or transparent laminae. Sir Isaac Newton was, I believe, the first to show that within certain limits of extreme thinness in extreme laminae, each grade is distinguished by its power of refracting a different prismatic tint. These limits—or, in other words, those grades—of thinness included in the space between where the first faint indications of colour are apparent, and the excessively thin part where all colour, and even the reflection and refraction of light, ceases, depend on the inherent density and refrangibility of the substance which constitutes the lamina or film. This law, which Newton applied to transparent films only, holds good also in the case of the fine particles which constitute all substances. These ultimate particles or molecules are doubtless very different in form, but an examination of the form spontaneously taken by crystals indicate that simple geometrical figures are most prevalent. The forms of the molecules, however, do not influence the general colour of a body so long as the sizes of their greater and lesser diameters fall within the limits of thinness which refract a particular colour. In short, the colour of a body depends solely on the size and refrangibility of its constituent molecules. Thus far the theory only accounts for the colour of those comparatively few substances which possess simple prismatic tints comprising rays of only one particular wave-length. Slight consideration will, however, show that it amply explains the presence of compound colours—those comprising more than one wave-length. It can easily be conceived that it is possible for a body to possess ultimate particles of two or more different sizes intermixed, or, at all events (if this be too important a postulate to grant without clear proof), that its particles may possess different refran-

gibilities. If this be assumed, we must conclude that the particles, whether differing in size or refrangibility, would refract appropriate colours, regulated thereby; and as these colours would reach the eye in combination, they would give the impression which we define as a compound colour, but which in reality has no existence except in the confused impression conveyed by the optic nerves in such cases to the brain. The tint of such a compound colour would, of course, incline more or less towards the simple tint refracted by the particles, the size or refrangibility of which predominate. On this theory photography in colours seems not only a possibility, but a probability. We have only to control the oscillation of any substance by the degrees of luminous intensity on the image produced by the camera to solve theoretically the problem. Or again, if we can control within minute degrees the thickness or refrangibility of a substance by the varying degrees of chemical action or force possessed by the different prismatic tints. But even if brought to practice, these processes would at first thought seem to possess two glaring defects—namely, if the degrees of colour were accurately reproduced, there would be no light or shade in such a picture; and, secondly, in order that we may have the compound tints, it is necessary that, by a perfect achromatic arrangement of lenses, an approximate image, so to speak, of each surface molecule should be produced, or, in other and simpler words, each particle on the surface of the object must be represented in the picture by an atom of film, which is capable of refracting the same tint. In the first case, the gradations of light and shade and outline could be obtained by superposing an ordinary monochrome positive over the transparent chromo-photograph; a perfect picture would thus result. It is obvious that the discovery of this long-desired and ideal art will require more than ordinary ability, perseverance, and research; yet, in this case at least, the reward would be equivalent to the labour. The discovery of chromo-photography would herald a new era in this age of art, and the vision of its vast importance, and of the probable civilising and humanising effect it would have on mankind, should encourage all who, by patient research, are endeavouring to reduce its theory to practice."

"T. H. S. II."

A FEW FURTHER REMARKS ON WAVE BATHS.

BY H. J. BURTON.*

I CALLED attention in a recent number of the *Autotype Notes* to the advantage of using wave baths in place of the ordinary dipping bath for studio work. I propose now to say a few words upon the construction of them. I need not refer to the numerous trials made in this direction and extending over some years, but any one who has given attention to this subject knows the difficulties to be overcome to prevent leakage in made-up vessels.

The improved bath as now made is essentially a wood case, lined with canvas, and rendered waterproof by a cement, which is spread with heated irons, at the same time attaching the canvas to the wood case in the most perfect manner, so that should the case at any time crack, no leakage would occur, as freedom from leakage does not depend upon the case, but upon the lining, the cement being elastic as well as waterproof.

Pine is undoubtedly the best wood to use for making the case, on account of its lightness, porousness, and least liability to expand or contract; it should be of such a thickness as not to "give" when roughly handled. The back should be framed and paneled, and care taken that the panels be loose, so as to allow for expansion or contraction. The sides and ends are best put together with double dovetails the whole width of the pieces of wood, so ensuring a very strong frame without either nails or screws.

The canvas is applied to the back, the frame, and the well-piece separately; they are then put together with wood

* *Autotype Notes*.

dowels, and the junctures made good with a fillet of cement applied hot, and finished off with a hot iron rod bent to a convenient shape. At the upper end of the bath an ebonite tube is inserted, to allow the contents to be drawn off; and a row of ebonite pegs is inserted in one of the styles, near the lower end, upon which the plates are supported when placed in the bath, and while being drained. A light frame covered with two thicknesses of leather cloth, placed so that the two unprepared sides come close together, makes a close-fitting cover, and which is supplied with lifting hinges to allow of its removal for cleansing purpose. On the sides of the bath, at a convenient place, are fixed a pair of centres, so placed that, when containing the solution, it will lie in a horizontal or nearly vertical position, by simply placing it in the position required, no support being necessary beyond the cradle, which takes the general weight of it.

As long as the wet collodion process is used, I am confident that these baths will continually grow in favour with professional photographers. The only thing necessary to ensure this is being able to get a reliable article for use.

In answer to some remarks that appeared in one of the journals, as to this kind of bath producing stains and oyster shell markings, I may say that in the Autotype Company's studios they are exclusively used from small 12 by 10 to 7 feet size, and no troubles of this kind ever occur; in fact, it would be simply impossible to turn out any large quantity of work by means of ordinary dipping baths.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER III.

NORTHWARD HO!—HOWIE FEELS GOOD!—PHOTOGRAPHING A CORPSE.

GILBEY, the head man in the expedition, proved to be exactly what the traveller had described him, a taciturn, silent man—a sort of domestic Diogenes, who looked upon speech as superfluous, or so much breath wasted, and who had reduced his language to monosyllables and signs. Fahey the difference between him and Howie—the one all chatter and noise, sparkling and fresh as a brooklet; the other calm, silent, and unfathomable as a deep lake. During their first meetings they used to eye each other in curious amazement. The volatile rattle of the one, and the brooding silence of the other, were sources of vast speculation and deep thought to each other. Gilbey would listen to Tom with open eyes and mouth, while his inner thoughts were no doubt bent upon solving the problem of how such a quantity of garrulity could be encompassed in one head; while Tom, in the midst of some wonderful escapade, would catch his eye and instantly stop short, and commence a long and silent inspection of him, after the fashion you see people look over some *rara avis* or wonderful relic in a museum. Yet, although their natures were so opposite, I am convinced that they had a great and real regard for each other; in fact, we were all well suited for each other, and never had an unpleasant word until Tom and I fell out on board of ship on our return voyage: but of that I shall inform you on a future occasion.

We were three days at Ardrossau waiting for the freighted steamer to arrive from Liverpool with the noble company, and busied ourselves by overhauling our traps. I do not think that at any other time in my life did I ever see such a conglomeration of photographic requisites as that which Gilbey had gathered around him. We had gallons upon gallons of bath secured in huge jars covered with wickerwork, hundredweights of iron, and about a ton of glass. Had we been going to photograph the whole world we would have had some left over to commence upon the moon and the stars. Gilbey was told to take plenty material with him—and he did it.

At length the steamer arrived, and amidst a Highland yell from the ragged urehins on the beach, we went on

board—bag and baggage—and before night fell we were steaming Northward Ho! Sweeping through the darkling waves with music, song, and laughter floating around us, with the moon peeping over the crest of the distant Ben Lomond, silvering the water and lighting the shadows on the Kyles of Bute, was it any wonder that we were happy—that a tinge of romance should spread itself over our feelings like honey on a sweet cake?

"Ah, Geo!" sighed Tom, as we leant over the bulwarks and enjoyed to the full our position, "this is something like. This is what I have panted for, for years. I don't know how it is, but this scene has an awful effect upon me. I feel better; yes, I do—I feel regular out and out good. Now I can realise the fact that it is a sin to steal a pin, to lie, to cheat, or otherwise behave like a blackguard. When first I came on board I must honestly say that my feelings were those of a pirate, and I found myself casting up the chances of raising a mutiny among the seamen, consigning the noble lords to a watery grave, taking sole command of the vessel, and becoming the scourge of the seas. But it is different now. I feel good and brave and noble. I am at peace with all the world. I freely forgive all whom I have injured in word or deed, and bless them into the bargain."

How many are there whose magnanimity ends in the same way!

"Yes, I have not felt so well since the shock I received when I was with Carey."

This Tom addressed to Gilbey, who had joined us. Gilbey looked an inquiry, but not a syllable passed his lips.

"What shock was that, Tom?" I asked.

"An awful affair that happened some time ago," quoth Tom; "a strange affair, and perhaps you won't believe it; but I will tell it to you all the same. You have both heard of Tim Finnigan, I daresay, the Irish gentleman that carried the hod. Well, Snooks was a slater with the same amiable weakness as Tim—he used to like a drop of the *cratur* of a morning. Snooks, independent of this failing, was a neat, dapper little man, and, I believe, was very clever at his business. One thing he used to pride himself upon was the unimpeachable way he walked the roofs; he was proud of his talent in this way, and used to take every opportunity of showing it off. People used to gaze at him in admiration and terror. The boys used to follow him about, and would rather see him run along the ridge of a roof than go to the circus. He was a regular hero in his way, I assure you. But pride is sure to have a fall, and so had Snooks. One day he was employed to repair the roof of an old lady's house in the suburbs. The roof of this old lady's house was built at a very acute angle, with two very old-fashioned attic windows starting out from it. There was no blame that could be attached to the old lady, for I was told that she cautioned him strongly not to run along the ridge in his usual reckless manner. But Snooks, apparently, was humau, and of course did not take the good advice. How it happened I cannot tell—whether it was a drop too much, or a more than usual decayed roof—but there was a rattle and slip, and a noise like a horse coming downstairs. The old lady, who had followed him upstairs, had just time to rush to the window, and see him go past. He saw her, however—smiled—waved a feeble adieu—gasped, 'What a devil of a fall I'll get!' and disappeared over the edge of the spout."

"Come, draw it mild, Tom."

"Sir! Mr. Gilbey, is that fair? He is always insinuating and doubting my veracity. And if he does that at the beginning, what will come of him at the end?"

Something like a chuckle was Gilbey's answer.

"No, Geo!" continued Tom, "I told you before that I felt good—that I felt far above the weaknesses that flesh is heir to. Snooks fell in the manner I have described, and Snooks died from the injuries received in

that fall, and according to the usual run of things I should have been done with Snooks for ever. But not so. Two days after his decease old Carey came into the studio in a state of unusual excitement. 'Aha Tom!' he cried, 'we have got such a rare job. You know Snooks the slater? Well, his old mother has discovered that he never had his picture taken—in fact, that she will have nothing to remember him by; and as he was the only relation that she had, she is determined to have him photographed as he is.'

And so it was. Old mother Snooks felt, at the age of sixty, that she was bereft of all her kith and kin—in short, that she was an out-and-out orphan, and was determined to have a picture of her son to console her during her remaining years. Pleasant or unpleasant she did not care, so be that it was a picture of her son.

Snooks had first been taken to a hospital, and thence to his mother's house, a little old-fashioned cottage, situate on the edge of a dreary moorland. To this place Carey and I went on the following morning. I said that I received a shock on this occasion; but I should have said, a series of shocks. First, I was shocked at the bare idea of having to participate in the nasty job; and shock number two was administered when Carey and I went to metamorphose an old hen-house into a dark-room. While we were grubbing around and putting things in order, a rustling in a corner attracted our attention.

"What's that?" cried Carey.

As he spoke, a long neck, looking ever so long in the uncertain light, was reached out towards us, on top of which gaped a pair of jaws, and above the jaws a pair of fiery bead-like eyes. This apparition hissed and blew in an awful manner.

"Ye gods! It's a serpent!" shouted Carey, as he bolted out of the hut with a terrific yell.

His cries brought Mother Snooks and the rest of the mourners to see what was ado. Then it transpired that they had forgot to inform us that there was a goose in that corner sitting upon eggs. You may laugh, but I can tell you it shattered our nerves awful, and we had to get some of Mother Snooks' whiskey before we tackled the job again. At last, everything got into fair sailing order, and with a plate in the dark-slide, we entered the chamber of death. Poor Snooks was there all right—as quiet and still as you need wish, and with rather a knowing look upon his rigid countenance.

"Now we must have him hoisted," quoth Carey, cheerfully.

"What?" cried Mother Snooks.

"I say we must hoist him up a bit," replied Carey. "You see, in his present position we would only get a picture of his nostrils—his nose would be abridged—his features shortened."

Then Mother Snooks lifted up her voice and gave him the word of denial; she dared him to touch a hair of her dear son's head: she called him names, and appealed to her friends that she said as much that he was no man when he would be frightened at a poor goose: he did not know his business, and if she was his wife she would take the broomstick to him. In vain did Carey and I expostulate and explain the absurdity of photographing the holes in Snooks' nose; she was as firm as adamant, and it was only after a good application of whiskey that her friends wrung a slow and surly acquiescence to the putting of a chair under the head of the coffin. Now this was a highly dangerous plan of hoisting him, and I pointed it out to Carey, but he merely pooh—poohed, and said it was all right.

Everything ready at last; the company crowding in breathless silence round the door; Snooks self-possessed and calm; the shutter was drawn; the cap about to be taken off, when Carey cries sharply, in his professional voice, "Steady, please!"

This caused the company at the door to start—the start shook the floor—the table creaked, and whish! over tipped

the coffin on to the floor. Gentlemen, that was the only time I ever had the horrible pleasure of feeling my hair stand on end!"

With one united cry, the company, headed by Mother Snooks, turned and fled. Carey dropped down in a dead faint when he saw the moving mass. So there I was left the only sensible man in that awful chamber. I ask you honestly if that was not a shock to hurt a man's health? It was a blessing that Snooks fitted his coffin so well, for it didn't spill him in the least, but tipped over him, bottom up, as neat as you like.

Although horror-struck at the scene, I kept my presence of mind, and rushing for the whiskey bottle applied it to Carey's lips. The effect was miraculous: he grangled, gasped, winked, and reached after the bottle like one o'clock.

"Where is he?" he gasped at length.

"Who?"

"Why, old Snooks!" answered Carey, looking suspiciously around the room.

"Here he is," I answered, tapping the bottom of the coffin in a reassuring manner; "safe and sound."

"Where's his mother?" asked Carey, feeling the back of his head.

"The Lord knows," I answered.

Then we went to the door, and looked forth; the nearest relative (with the exception of the mother) was at least a quarter of a mile over the moor, and making the best running ever they did in their life. The mother was sitting on a big stone about two hundred yards from us, shouting "Police!" and "Murder!" in the most maudlin manner.

"Now is our chance, Carey," I cried; "let us go back and hoist him up to our own content, and the job is done."

We did it; we photographed him in dead silence. We developed him in the hen-house amidst the hissing and blowing of the disturbed goose, and came forth with the negative in time to meet the mother and the relatives returning from their outing.

A fair allowance of whiskey seemed to fetch all our levels, and we would have parted friendly if it had not been for Carey's hat.

"Why, what about it, Tom?" I asked.

"Why, you see," quoth Tom, "when he came to try it on, it would not fit, so he swore that it was *not* his. He offered to fight any man who dared to say that it was his, so all the men who possessed tall hats silently passed over their beavers to him to try on, but none of them would fit."

"Why, how was that?"

"Why, when he fell down in the faint, he knocked his head on a corner, and raised a bump on it like the hump of a camel, so, of course, his hat wouldn't fit; he had to wear it far back on the lump, or over his eyes; but to this day you can't make him believe other than that some one swindled him out of his hat. What do you think of that for an adventure?"

Neither Gilbey nor I spoke, so Tom, after eyeing us for a minute or two, started off again. "You think it wonderful! So it is, but I can tell you more wonderful tales than that —"

"Oh, oh!" gasped Gilbey, "Mercy! Help me below—I faint—I die!"

"Do you want to kill us, Tom?" I cried, reproachfully.

"Do I want to kill you?" repeated Tom, scornfully. "Some people can stand nothing! I'll go to those who can appreciate my genius."

So Tom went forward to the galley to harrow up the souls of the seamen, with whom he was on friendly terms already.

(To be continued.)

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DETAINING OPERATORS' SPECIMENS.

DURING the score of years, or nearly, we have had the Editorial charge of this journal, we have been in constant receipt, at intervals, of complaints from operators that specimens, sent as examples of their work in reply to advertisements, have been detained, no pressure serving to secure their restoration. In some of the cases into which we have had opportunity of making enquiry, we have found that the detention was due to the carelessness of the sender, who had failed to send an address! In some, he had failed to put any name or distinctive mark on the specimens, and in the haste of opening several similar letters, the specimens had got mixed without presenting any aid to sorting them; in some, to the absence of an addressed and stamped envelope, when the advertiser—churlishly enough, it must be admitted—declined to address and stamp a dozen or a score of envelopes for the purpose of sending back what appeared to him valueless specimens.

But there are, there is too much reason to fear, some cases in which some good specimens are appropriated because they possess some value or interest.

We have just received a complaint from a correspondent, of twice being treated in the same manner by the same person, which gives the circumstance a deliberate, if not a systematic air. Here is the letter, with the name omitted, in deference to the uncertain character of the English libel laws:—

"Some time since, having occasion to advertise in your columns for a situation as assistant, I received a reply from * * * of Sherborne, requesting me to send carte of self and specimens of my work, which I at once did. I then received another letter asking if I was capable of undertaking retouching; this I answered in the affirmative, but neither received a reply nor my specimens, and heard no more from him until last week, when he again answered an advertisement of mine requesting specimen. I then wrote him asking him to return the ones he had previously received, but can get no reply. My object in asking you to insert this is, that any who have been treated in a like manner may communicate with me with a view of taking steps to put a stop to this shameful system of obtaining specimens, and in many cases from those who can ill afford to part with them.—I am dear sir, your respectfully,

"C. W."

We think that whether such detention of specimens arises from carelessness, churlishness, or dishonesty, the cruelty it involves can never have occurred to the perpetrator. An operator applying for an engagement, without the means of showing the quality of the work he can produce, is helpless indeed, and must often remain so.

It is, we fear, very little use to appeal to those who neglect to return such things through carelessness, as care-

lessness is an unconscious fault which few men, however careless, admit, or recognize in themselves. The remedy chiefly rests with the operator in dealing with his specimens. Let him work across all of them—say on the back-ground—his own name, so that they cannot be exhibited as the work of some one else. Let him also place them always in a stamped and addressed envelope, so that they can be returned to him without trouble. And let him carefully avoid sending all he possesses to any one man. With these precautions duly regarded, there would occur few occasions for complaint, such as that so legitimately made in the above letter.

THE ALLEGED EARLY PHOTOGRAPHS.

THE persistent vitality of an error is amazing. Everybody interested in photography remembers the long investigation devoted to some old pictures alleged to be photographs, discovered in Watt's house at Soho, Birmingham. The basis of the supposition that they might be photographs consisted in the fact that they were monochromes, they were copies of paintings, and were manifestly by a process of multiplying, as there were several duplicates of some. That they were not photographs was manifest for several reasons, one being sufficient, namely, that the duplicates were not identical, as, if printed from a cliché, they must have been. Despite the decision of various capable investigators, we find in *Mayfair*, a generally well informed journal, a paragraph like the following:—

"Sankey's way of securing immortality—going down to untold ages as a voice singing 'Hold the Fort!' on a piece of tin-foil, sealed up in a foundation stone—is not a bad notion. Only, by the time the future generations find that hieroglyphic scrawl, the chances are the phonograph will have been forgotten, and its turn for being re-invented will be coming round again. I am haunted by the recollection of those photographic negatives that were found behind the wainscoting of James Watt's room, a hundred years after he had hidden them away. Photography had been discovered, forgotten, and then discovered again as a perfectly new thing."

Apart from the revival of the general error, we may remark that there never was either supposition or allegation that the pictures were negatives, and they were found amongst the rubbish stored away in an unused room at Soho, not behind the wainscoting of Watt's room. We may as well quote another paragraph from the same writer, as it refers to photography, and contains another curious error. Here it is:—

"Photography leads me to mention Sarony, the famous Scarborough artist, who died last week in the prosperous town he had done so much to make. I remember Sarony thirty years ago, before he found his way to Scarborough and a fortune. He travelled in a handsome caravan from town to town, popularising the Daguerreotype. Sun-portraiture on glass had not been recovered then from the strange oblivion to which Jammy Watt had consigned it. A quarter of a century makes a vast difference to some men. Now there is Sarony Square, and all the world has seen the handiwork of the tall, handsome man with the long flowing beard."

It is perhaps scarcely worth remarking that Sarony, truly a handsome man, with a long flowing beard, a splendid chest and shoulders, the torso, in fact, of a giant, was not a tall man, but slightly under middle height.

FRENCH CORRESPONDENCE.

MAGISTRATES AND PHOTOGRAPHERS—PHOTOGRAPHING THE NATIVES—DRY PLATES OF GELATINE.

Magistrates and Photographers.—Magistrates seem likely to occupy an important place in the chronicles of photography. The ridiculous spectacle that one of them made

of himself the other day, when he ordered the name of a photographer to be struck off the jury list on the ground that no photographer was sufficiently intelligent to consider a criminal verdict, appears not to be an isolated case. A similar incident, in which parts were played by a magistrate and a photographer, happened the other day at Paris, and deserves to be widely known. As is no doubt the case in England, the portrait photographers of reputation here request all their customers to pay the amount of their orders before allowing them to be taken. This is a regulation to which the public is well accustomed, and to which it submits quite willingly, knowing that every well-bred visitor will conform to the rules and customs of an establishment to which he repairs at his own inclination. With this view, also, it is always customary to have written up in large letters, in some conspicuous place where the orders are taken: "Customers are requested to pay before being taken." In the house where the incident we are about to relate happened, this notice was written up in four languages on a window frame on one of the Boulevards; no one, therefore, could plead ignorance. However, a gentleman one day lately presented himself at the office of this establishment, leading by the hand a pretty girl, of whom he desired to have a photograph taken; and after he had made choice of the style and size he wished for, he was politely requested by the young lady who booked the order to be good enough to settle the amount. But though she directed his attention to the notice on the window frame, his hand did not seem to be finding its way to his pocket, and as he appeared to pay no attention, it became necessary to repeat the request several times. This attracted the attention of the proprietor of the establishment, who was just engaged in taking the orders of a celebrated personage; and when the latter, without any reminder being necessary, bent his steps in the direction of the cashier with the object of discharging his account, the former turned to his dilatory customer, and, with a courteous movement, observed, "You see, sir, all our visitors do not require to be asked to conform to the rules of the establishment." "Have you, then, the pretension," asked the visitor, "to require payment before you deliver the goods?" "It is the custom of the house, sir; you may see by that notice that no one is deceived." "But if you cannot place confidence in me, why am I to trust you?" "No one compels you to come to me, sir." "Well, then, I will pay; but it is understood that I have a right to refuse the goods if they are not in accordance with my order." "Certainly, sir; our clients are too distinguished for us to offend them." With this hint the proprietor left the room, while his unknown customer proceeded to pay his account with an ugly look of discontent on his face. Fortunately, it was his lovely little girl who was to be taken; if he himself had been sitting, the camera would have rendered an expression of countenance which the photographer might have labelled with justice, *Le quart d'heure de Rabelais*. "It is then agreed, mademoiselle," said the stranger, after pocketing his purse, "that I have the right to return the photograph of my little girl if it is not successful?" "Certainly, sir," replied the cashier, "you need be under no apprehension. Will you be kind enough to walk upstairs into the studio?" "Here is my card, mademoiselle," said the gentleman; and on glancing at the card, in order to enter the name and address of her troublesome customer, the cashier was doubly astonished to see that the originator of this little scene (the like of which she had never experienced since she had presided at the pay-desk of her employer) was a M. A—, *Juge de Paix*. The magistrate's child was duly photographed with all the ease which so little amenable a visitor would be sure to command, and after the sitting the operator, not without some stiffness, said: "You will receive a proof, sir, the day after to-morrow."

Of course, it will be at once guessed that under such circumstances the most successful proof that had ever been secured would be sure to meet with the indignity of a

refusal. "Give a dog a bad name, and hang him." The next day the magistrate reappeared, and with a coldly-polite air, handed back the admirable likeness of his little heiress (let us hope, for the sake of her future husband, that she does not inherit her father's character). "I bring back your proof, sir," he said to the operator, whom he had caused to be disturbed and fetched away from his work; "it is not good. Tell them to return my money." "Will you allow me, sir?" replied the artist. "This proof is a success in every respect. However, if you wish it, we will take another. Only permit your little girl to sit again, and we will do our best to satisfy you." "Not at all! Not at all! I have already warned you. Return me my money; you told me I had the right to refuse the portrait." "Quite true, sir," replied the photographer, "but that was in the case of a failure. I will do the work over again, in order that I may be completely justified, but I will not return you your money unless a competent judge will declare that the photograph I have sent you is really a bad one." "Very well, sir; you refuse to keep your engagements, and you shall hear from me." "I shall be glad to do so, sir," said the photographer; but before he could utter the words, the magistrate was already lost among the crowd on the Boulevards, with such haste did he descend the stairs, dragging with him his little girl, whose eyes were wide open with astonishment.

The next day the photographer received a stamped paper. The magistrate had summoned him to appear before a colleague of his own, the magistrate of that special district of the city, as an arbitrator. Before this Court, relying on his official position, he had made arrangements to bring his photograph and his complaints, although by doing so in this way he kept more than a hundred persons, who really had a prior right to be heard, waiting for an audience. He expounded his case at full length, and concluded by demanding the repayment of money paid in advance for goods refused as not being according to the order. The photographer, in reply to the magistrate before whom he had been summoned, stated that he was very sorry to keep so many persons waiting with business, probably much more important than this, for he had nothing to say further than to repeat his offer to execute the portrait again; he added that he denied the competence of the tribunal before which he was cited, and that he would only submit to the decision of a photographic artist. The arbitration having thus fallen through, the case was remitted to another Court. Here the plaintiff pleaded that no one could better than himself form a judgment as to the resemblance of a portrait to his own child; that he declined to be the victim of the arbitrary regulation of a house of business which, in the interest of justice, ought to be abolished. But the photographer, firm as destiny, and immovable as his own camera, stuck to his text: "I do not admit the competence of this tribunal; I demand an expert." The judge, not having a precedent at hand, and really not knowing how to get out of the fix into which his colleague had forced him, at last gave utterance to the terrible words: "I nominate such and such a photographer as expert." Tableau! The photographer left the Court as radiant as the morning star, the plaintiff with his feathers ruffled like a hen who has had a narrow escape from a fox; and, in fact, this magistrate, who had wished to be at the same time judge and plaintiff in his own cause, never afterwards put in an appearance. He gave up his money and waived the right of having his photograph taken again—all which is a matter of course.

Now, this little story, which is really and strictly true, affects, perhaps, more than at first sight appears, the question first mentioned of the magistrate who refused to allow the name of a photographer to be inserted on the jury list. Perhaps the same man is the hero of both narratives; this would at once explain why he regarded a photographer as a person devoid of intelligence, because he had once met one who possessed more than himself.

(To be continued.)

GERMAN CORRESPONDENCE.

BY DR. VOGEL.*

DR. SCHULZ-SELLACK DECEASED—THE PURPLE OF ANCIENT TIMES A NEW PHOTOGRAPHIC SUBSTANCE—SENSITIZING ALBUMEN PAPER BY IMMERSING—THE LATEST ABOUT GELATINE PLATES.

ONE of our contemporaries recently expressed regret that there was nothing heard any more from the renowned German photo-chemist, Dr. Schulz-Sellack, and it was evident that the writer of the paragraph was ignorant of the fact that at that time the Doctor had been dead for some months already. He died in May of this year, having taken poison, together with his adopted father and his mother. All three had been living formerly in pretty comfortable circumstances, but by-and-bye they became reduced, step by step, and when the last had gone, they committed suicide. It is to be deeply regretted that the departed man of science kept his misery locked up all within himself, as otherwise his friends would cheerfully have helped him to bridge over his momentary difficulties. Dr. Schulz-Sellack was not unknown in America. He went to New York in 1871, after having published some very interesting papers upon the photography of the spectrum, and the relation between absorption and photographic effect. He assisted Kurtz, in New York, as retoucher for some time, and went with Gould, in 1872, to Cordoba, Argentine Republic, from whence he returned to Berlin, where he occupied himself with studies relating to the natural sciences. His old friends and colleagues seldom got a glimpse of him, and only the notice of his death drew general attention to him once more. The last fruit of his researches published by him related to bromo-silver paper. He found that bromo-silver could be used in the positive process just as well as chloro-silver. Bromo-silver paper, by itself alone, however, gives only weak pictures, and it is only after fuming with ammonia that it prints really beautiful and brilliant, and also much faster than chloro-silver paper. Upon his recommendation bromo-silver paper was practically tested, and the fact was thereby established that the making of chloro-silver and bromo-silver produced extraordinary brilliant pictures. In spite of all, the papers did not prove a success in practice; their extreme sensitiveness proved to be more of a drawback than an advantage, for they require special thick negatives, that the lights might remain white. One of the most interesting observations made by Schulz-Sellack is the dissolution of the crystals of chloro-silver, bromo-silver, and iodine silver in the light. He prepared plates of so-called vitreous iodine silver, which were quite diaphanous, but became dull in the light. He even copied pictures on such plates, and it thereby was observed that according to the relative intensity of the light, curious colours appeared, which phenomena he made mention of in explaining the coloured photographs of Poitevin, Niepce, &c. Dr. Schulz-Sellack left no papers behind him. He declared all of them to be worthless, and burned them up. What a pity that the untiring, highly-gifted scientist had to speak thus despondingly.

One of our younger chemists, Dr. Schnuek, who occupies himself much with experiments on alizarine, published recently an interesting work upon the purple of the ancient times, and according to these experiments, this in olden times so much desired and praised colour seems to be a photographically interesting substance. It is the secretion of the purple fish. Schnuek writes:—"When a piece of white linen is soaked in this stuff, and exposed to the light of the sun, the originally yellow stuff changes from green and blue to purple or scarlet, while a strong garlicky smell is emitted. Daylight is absolutely necessary to the formation of these colours. In the dark this stuff remains unchanged for years. The colour is not affected by alcohol, soap, or acid; only chloric acid or nitric acid destroys it,

and we have here a dyestuff which, contrary to the rule obtaining with most other dyestuffs, not only does not fade in the light, but actually gains in intensity. The stuff is much less affected by corrosive substances than most other similar dyestuffs are, and we have in it a substance which answers the most severe requirements in regard to durability which can possibly be made. If it were possible to gain this stuff in larger quantities, the problem of producing durable photographic pictures would be solved in the most simple manner." Schnuek states that from four hundred pieces (*Purpura lapillus*) he obtained only two milligrammes of the purple powder. But doubtless the purple-fish in the Mediterranean will yield more of the stuff, as otherwise the ancients could not have used the same in such considerable quantities. It is surprising, however, that the photographic properties of this interesting substance have not been discovered till now. Schnuek classes this dyestuff (which he calls "Punlein") among the indigo group, and as indigo has been produced already through artificial means, it is not improbable that also this dyestuff may be obtained through artificial means some day, and then its use for photographic purposes will be assured, although the smell—resembling the strong smell of garlic—which is emitted in printing may not be a very acceptable and pleasant addition to the other pronounced smells for an elegant atelier.

It has lately been recommended here to sensitize albumen paper, not in the old way of floating on the silver bath, but by immersing in the silver bath. A paper is obtained thereby which is more than three times as sensitive as ordinary paper, and printing at least just as brilliantly.

The gelatine plates are yet much talked about, and it is now a pretty well-established fact that they are gaining more and more ground in photographic practice. In summer, of course, when we have plenty of light, we do not need those highly sensitive plates; but we want them the more in winter, and it is certain that the winter is the real favourable season for the gelatine plates. They are handled easily then, while in summer their proper use meets with many difficulties, as the most recent experiences demonstrated. The gelatine skin softens and wrinkles, &c. Obernetter adds some isinglass to the gelatine to avoid these annoyances; but the best is to apply cold water, and the ice-pitcher seems to be destined to become an indispensable requisite for the dark room in case the gelatine process is introduced into summer practice. Obernetter tried, some months ago, to introduce liquid gelatine emulsion into the market, but the same did not prove a success. In summer it did not keep, and now Obernetter has replaced it with solid emulsion, as did also Kennett. While with other plates, insufficient sensitiveness proves a drawback, it may happen with gelatine plates that the over-abundance of sensitiveness works disaster. When I am experimenting with gelatine plates in summer, I have to shut off my whole studio, with the exception of an aperture of about fifty square feet, in order to prevent over-exposure, and yet I must not expose more than from three to five seconds. In out-door work the instantaneous shutter is quite insufficient, and it would be a grateful task for the skilled mechanics to construct an instantaneous shutter, working quick, without shaking the objective. It is probable that if the gelatine plates come into general use, large and costly objectives will be dispensed with, and we can then easily work with the smaller and cheaper apparatus of Steinheil, or with the rapid rectilinears.

THE SUPPOSED COMPOUND NATURE OF THE ELEMENTS.*

BY J. NORMAN LOCKYER, F.R.S., ETC.

CONTINUING my researches into the nature of the so-called elements, I have found that when carefully distilled metallic

* The Philadelphia Photographer.

* Read before the British Association for the Advancement of Science

sodium was condensed in a capillary tube, placed in a retort, and heated in a Sprengel vacuum, it gave off twenty times its volume of hydrogen. Phosphorus, carefully dried and submitted to the same treatment, gave off 70 volumes of a gas which appeared to consist chiefly of hydrogen. Although it gave some of the lines of phosphorus, it was not P_{113} , as it had no action on solution of cupric sulphate. A specimen of magnesium carefully purified by Messrs. Johnson and Matthey gave me a magnificent series of coloured phenomena. The hydrogen lines first appeared, then the D line—not the sodium line, be it understood, for the green line was absent—and, lastly, the green line of magnesium (*b*) and then, as the temperature was increased, mixtures of all these lines, with the blue line, the D line being always the most brilliant. In this experiment only 2 volumes of hydrogen were collected. From gallium and arsenic no gas of any kind was obtained. From sulphur and some of its compounds sulphurous anhydride was always obtained. From indium hydrogen was given off in vacuo before heating, while from lithium no less than 100 volumes of hydrogen were given off. The conditions of the experiments were always the same, the only variable being the substance itself.

Correspondence.

LUXOGRAPHIC PICTURES AT FALMOUTH.

SIR,—In your last issue, containing report of the Cornwall Exhibition, I am placed in a very unfair position by the judges' report, and also by your correspondent.

The pictures referred to were from negatives taken at a fancy dress ball, a few months ago. During the night of the ball I exposed one hundred and fifty cabinet gelatine plates, and obtained one hundred and forty good negatives. Knowing I was so successful, the manager of the Luxograph Company asked me for a few prints as proofs of the good work that can be done by the luxograph, and I suppose sent those to the Exhibition, with other work by different photographers, merely to show the kind of work that could be done by night. At least, this is the construction I put on the matter, and trust to find this stated in your journal for their own sake as well as my own, for I do not like to be suspected of having done what I trust no photographer ever has done or will do—viz., to attempt to obtain an award for work not done by himself.

May I be allowed to say that all the negatives referred to were exposed and developed by myself, hence the photographs looked upon so dubiously were my own production.—Yours truly,
J. S. HAZARD.

PS.—I enclose a few of the specimens for your criticism.

[It was unfortunate both for Mr. Hazard and the Luxograph Company that a previous understanding had not been acquired before sending in specimens. The examples exhibited are very highly commended, and that worthily, both by our representative and by the judges. The prints, some of which are before us, afford high testimony to the efficiency of the lighting arrangement, and to the photographs being, as alleged in our last, scarcely inferior to wet collodion pictures.—ED.]

THE following letter has been addressed by the Luxograph Company to the Judges of the Royal Cornwall Polytechnic Exhibition, photographic department:—

"GENTLEMEN,—We notice in the report of the above exhibition, that you (the judges) call special attention to some fine examples of portraiture taken at night by means of the Luxograph process, &c., but owing to the same pictures having been sent by two exhibitors, you (the judges) are unable to make any award. We therefore feel it neces-

sary that we should at once explain the reason of this occurrence, and thus call your attention to a decided miscarriage of justice.

"We, as manufacturers of the apparatus, exhibited two frames of Luxograph pictures, also an album, to show the results obtained by different photographers who are using the instrument, and not as the photographer or as our own pictures, and they were thus labelled 'Luxograph Portraits (Alder and Clarke's Patent).' The pictures in the album were arranged so that the photographers' names could be seen, and were exhibited with the full consent of the different producers.

"The award, therefore (if any), is clearly due to Mr. Hazard, who exhibited a frame of Luxograph pictures as examples of his own work and also as specimens of fine photography produced at a fancy dress ball by means of the Luxograph patent. If any award had been made us for the photographs it must have been returned, for the only one we could accept would be one for the invention or process now known as the Luxograph.

"We feel sure that this explanation of the circumstances will enable you to rectify the matter, and that Mr. Hazard will not suffer through having accidentally presented us with some of the same subjects as he himself exhibited, for there were 150 excellent cabinet negatives out of 155 taken on that particular night, and, therefore, no dearth of regalias or subjects to select from.—We have the honour to be,
"THE LUXOGRAPH CO."

[There can be little doubt, we think, that the medal in this case is due to Mr. Hazard. We fear, however, that after the judges have separated, believing their work done, there is little chance of a reconsideration of the case. We should be glad to learn that the judges had set aside difficulties in order to secure justice.—ED.]

DEAR SIR,—Seeing in your special correspondent's report that Mr. Hazard and the Luxograph Company exhibited prints from the same negatives—hence no award was made—one is tempted to ask a question with reference to the medal awarded to Mr. H. G. Cocking's enlarged group of the members of the South London Photographic Society. Had Messrs. Wratten and Co., who prepared the gelatine plate upon which it was taken, and the Autotype Company, who made the enlarged negative and print, also exhibited prints, who would have been entitled to the medal, or would there have been "no award," as in the case mentioned by your correspondent?
NOT AN EXHIBITOR.

[Our correspondent hits an important blot. Where a result is produced by collaboration, it becomes very difficult to decide the legitimate claimant for the honours of production. Probably the judges would do their duty in awarding to the exhibitor. It is scarcely their duty to make detailed enquiries as to the real producer.—ED.]

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN EXHIBITION, 1879.

DEAR SIR,—I am requested to ask you to allow me to remind intending exhibitors that Friday, September 26th, is the last day appointed for the reception of pictures—by packing case, to Mr. Bourlet, 17, Nassau Street, W.; and by hand, at the Gallery, 5, Pall Mall East.

Any further information will be supplied on application to,—Yours faithfully,

EDWIN COCKING (Assistant Secretary.)
57, Queen's Road, Peckham, S.E.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE first meeting of the session took place on Thursday, the 11th inst., Mr. C. ADIN, President, in the chair.

After the minutes of the previous meeting were read and confirmed,

The SECRETARY read the resignations of Messrs. John Frankland, F. G. Yorston, David Young, William Griffiths, and M. Noton.

It was proposed to make Mr. Noton an honorary member of the Society, which proposition was accepted with acclamation.

Mr. W. J. CHADWICK (Secretary) then read a paper on "Photographic Societies," advocating more interest, energy, and management, with various suggestions of how to obtain these. A discussion followed.

Mr. W. G. COOTE brought before the meeting a splendid collection of negatives by the collodio-albumen process, and many by the gelatine process.

Mr. W. B. WOOD exhibited a quantity of photographs from collodio-bromide emulsion negatives.

The SECRETARY showed a few gelatine negatives, quarter-plate size, and two 15 by 12 enlargements from the same small negatives. He also exhibited two instantaneous shutters, and explained their action.

Mr. JOHN CHADWICK also exhibited an improved instantaneous shutter.

Messrs. Wade and Wright were proposed as auditors for the Treasurer's accounts.

The nomination paper was passed to the members for officers to be balloted for at the annual meeting in October. The meeting was then adjourned.

PHOTOGRAPHIC SOCIETY OF IRELAND.

A MEETING of this Society was held at the Queen's Institute, on Wednesday the 10th inst., Professor BARRETT, F.R.S.E., in the chair.

The minutes of the former meeting having been read and confirmed, five new members were elected.

Mr. J. V. ROBINSON read a paper, principally intended for the guidance of beginners, on the "Amateur Practice of Photography." At the conclusion, an animated debate took place on many of the points raised, especially the sizes of the cameras and plates desirable for the average amateur.

The CHAIRMAN then called on each member who took part in the recent excursion of the Society to Powerscourt Waterfall to produce the results of his day's work, and to explain and exhibit the failures.

The negatives and prints shown having been fully inspected and criticised, the result of the day's outing was generally considered most satisfactory, each member having secured several fine negatives as a souvenir of the first excursion of the Society.

The meeting then adjourned until Wednesday, the 8th of October.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY.

At the meeting of the 20th of June the chair was taken by Herr PRUMM, as, in consequence of having injured his foot, the President, Professor H. Vogel, was unable to be present.

Herr O. HEIM, of Grimmen, sent a receipt for making a durable paste. He takes 20 grammes of wheat starch, and makes it into a stiff paste with a little cold water; then he pours 100 c.c. of *boiling* water *all at once*—not gradually—into this paste, and stirs it rapidly. A little carbolic or salicylic acid is then stirred in, and a paste is obtained which will keep indefinitely (or at any rate until it dries up) in a cool place.

Several of the members present remarked that they were in the habit of preparing paste in the same way, and found it very good; but

Herr ROLOFF observed that care must be taken to have the best starch, as good paste could not be made with the inferior kinds.

Herr BOLL stated that he found paste to stand very well when kept under cold water.

Herren BOLHOEVNER and HEIDENHAUS, of Munich, submitted their patent process for producing collotype plates in high relief; but

Herr SCHAIL expressed a fear that by this process the most delicate parts of the relief were liable to spoil, as, according to the description which had been given, the soft places in the

plate, where the light had not acted, were wiped away with a soft cloth cushion.

Herr HARTMANN, of the firm of Loescher and Petsch, exhibited a collection of photographic portraits and genre studies. Contrary to the usual practice, Messrs. Loescher and Petsch take some of their pictures of an object exposed to direct sunlight, with the shadow thrown on a white background, and yet they appear soft and harmonious. Others are taken in the studio, but with a white background; a lady in Egyptian costume taken in this way gave a very striking picture. In the case of another lady, taken at an open window, the clear atmosphere formed the white background.

The CHAIRMAN expressed the thanks of the Society to Messrs. Loescher and Petsch for having, as so often on previous occasions, brought to the notice of the Society new and interesting work, the originality of which merits imitation. On account of their very artistic appearance, the photographs excited general admiration, and were warmly praised by Herren Reichard and Schaarwachter, who believed that these pictures gave an indication that photography would soon be in a position to hold its own in rivalry with creative art.

Herr WIGHT showed a new pneumatic shutter for the camera. It consists of a long board having an opening in the centre, and made to slide up and down in grooves in front of the objective. When quite at the top it is held fast by a spring, and the lower part closes the objective. This spring being released by pneumatic pressure, the board falls, and the objective is thus closed by the upper part. The exposure lasts only so long as the time taken by the opening to pass before the objective, and this time has been calculated by Herr Wight as one-twentieth of a second. To increase the length of the exposure the grooves and board are placed in a slanting position; to shorten it, an india-rubber spring is fastened at the lower end of the board, and pulls it down, so that the opening passes over the objective in about one-fortieth of a second.

Herr REICHARD described the attempts he had made to obtain on salted paper an enlargement of an ordinary negative by means of reflected sunlight without getting an image, even after an exposure of three hours.

Herr PRUMM believed that for enlargements the negative must be very thin and transparent.

Herr SCHAARWACHTER was of the same opinion, and added that he had produced very good enlargements with such negatives on ordinary albumen or salted paper by using a solar camera in which the sunlight is thrown direct on the negative by means of a condensing lens; in this way he had enlarged a carte bust to three-quarter life-size with an exposure of five quarters of an hour. With reflected sunlight, of course, the exposure would be longer, and the enlargement could not probably be carried to any greater extent with a chance of producing a good result. Unfortunately, excellent as this process is, it can only be employed to a limited extent in a place like Berlin, where the necessary intensity and continuous direction of sunlight could not always be relied on; in winter, for example, the solar camera cannot be used at all. Another drawback is that, as experience shows, the public will only order enlargements of a negative after the required number of prints have been taken from it; but, as may be gathered from what has already been said, ordinary negatives will not answer the purpose of this process, and it is not always possible to take fresh ones. To obtain the required degree of transparency is often very difficult. Instead of common paper, Herr Schaarwachter recommends the use of Van Monckhoven's nitro-glucose paper; he observed that Wunder, of Hanover, has used such paper for solar enlargements, after silvering for only half a minute, and then drying between sheets of blotting-paper. The result is that the image does not penetrate deeply into the paper, but remains on the surface, and in consequence stands out more.

A letter was read from Herr V. SCHUMANN complaining of want of success with the gelatine emulsion process, and asking for information as to the cause thereof. His letter ran as follows:—"I operated most carefully, according to Bennett's formulæ. I emulsified for seventy-two hours at a temperature of from 30° to 32° C., and washed the emulsion under a tap of filtered town-water. Before coating the plate, I take care to bring both it and the emulsion to a temperature of 30° C, when the emulsion will flow easily. Drying is rapidly effected with the help of one of Vogel's drying boxes. The negative possesses wonderful delicacy, provided the film is not injured

in developing or intensifying. I develop in a pan with pyrogallie acid (1 : 300), potassium bromide (1 : 8), and one or two drops of ammonia, according as required. So soon as the finest details appear, the gelatine begins to separate, generally at the edge of the plate; after the lapse of a couple of seconds it trills, and the image is destroyed. Washing quickly to a certain extent stops the injury from extending, but it may be quite prevented by fixing before intensifying. When the plate is intensified with pyrogallie acid and silver citrate, the whole or part of the image often separates immediately previous to its attaining the required intensity. This defect is of less frequent occurrence when the intensification is effected with mercury chloride, and afterwards with ammonia. Star-shaped spots are formed, and then soon float off, and lie loose on the surface of the glass. The clearest lights are less often attacked, and remain after washing as parts of the image. I have submitted plates coated with the same emulsion to treatment of various kinds; I have developed both with iron oxalate and with pyrogallie acid, using sometimes stronger, sometimes weaker, solutions; I have intensified, after fixing, with pyrogallie acid and silver, and also with mercury, but the same imperfection always made its appearance—sometimes in greater, sometimes in lesser, degree."

HERR WIGHT remarked that he had experienced the same defects, but had not been able to discover the real cause. They did not occur now so frequently as formerly; but he could never be sure of having entirely got rid of them. He had observed that they were more likely to make their appearance when the emulsification had been extended over a long time. Great care must be taken to clean the plates properly; he himself used ammonia, and afterwards clean cloths for that purpose, and he never employed a substratum. In developing, he used a weaker solution of pyrogallie acid (viz., 1:800) than the writer of the letter. To prevent the film from separating he varnished the edges of the plates with a solution of caoutchouc. Generally he advised that plates which showed a tendency to frilling or separating should be dipped for half-a-minute into a concentrated solution of alum, although, of course, in that case, the intensifying would proceed much more slowly. He had found the above-mentioned defects to occur much oftener with plates and emulsions prepared in hot weather; on that account he recommended that plates which it is intended to use in summer should be prepared in the cool weather of spring.

Herr O. LINDNER always uses a substratum for gelatine plates, as without it he found it difficult to obtain an even coating.

The next meeting was held on the 4th July, Professor VOGEL in the chair.

Professor SPORE informed the Association by letter that the Solar Observatory at Potsdam was now approaching completion, and stated that it would be open to members under certain conditions. The President suggested that so soon as the Institution was definitely in working order the members of the Association should undertake an excursion to visit it.

Herr METNER, of Breisach, sent an illustrated list of prices of dynamo-electric machines for the electric light. The President drew attention to one of the smaller machines, producing a light equivalent to 300 candles, which he thought might be very useful for photographic purposes. Such a machine would cost about £34, with an additional £9 for the self-regulating lamp; it is on the Siemens' principle, and requires two men to turn it.

Herr REICHARD feared that a machine set in motion by hand would produce an irregular light; it had been observed that gas-motors were open to this objection.

Professor VOGEL explained that any unsteadiness in the light was not due to the machine, provided that the fly-wheel and transmission by toothed wheel run smoothly.

Herr C. QUINDE was of opinion that for the purpose of enlarging—to which purpose the electric light would in the first instance be applied—unsteadiness would not be of any great importance.

Dr. VOGEL exhibited two examples of metal decoration, produced by Herr Falk's photographic method; one of them was a plate with figure drawings, the other a lamp-stand with ornaments. The method consists in coating the metallic surface with a photographic film, which is then exposed under a transparent positive; by this arrangement the parts lying beneath the dark places of the positive are not affected by the light, and are consequently capable of being etched.

With curved surfaces a print taken in fatty ink on paper by a photographic method is transferred to the metal, and all the parts covered with the ink are by this means protected from the etching. It is a peculiarity of this process that the etching fluid colours all the etched places black, and this adds considerably to the effect of the whole.

Herr SCHAUHL showed some specimens of prints taken by a new process. His method, as he described it, is to coat a thin zinc plate with chromated gelatine, which he then exposes under a negative. The film is then rolled up with some reducing substance, which adheres only to the parts affected by the light. Tracing-paper impregnated with iron is then pressed against the plate, and the iron being reduced at those places, an image is obtained which is said to be much more delicate than one produced by ordinary photo-lithography.

Herr BOLL reported the results of an experiment to sensitize albumenized paper by direct immersion in the silver bath, instead of floating. He found that when the silvering was executed in this way for about four minutes, the paper copied about one-third more rapidly than one silvered only on one side, and that the pictures obtained lost nothing to be desired as regards purity and brilliancy.

Herr BRANDT remarked that this method used formerly to be recommended in cases where the bath was weak; but Herr Boll objected that with a weak bath the albumen was liable to separate.

Herr MAROWSKY pointed out that when a little silver is accidentally deposited on the reversed side of the paper the spot becomes visible in copying, but disappears again in fixing. Occasionally such a spot appears lighter than the rest of the picture.

Referring to this, Herr HALWAS had observed that spots of a similar kind only make their appearance when the bath is weak.

Professor VOGEL explained the greater sensitiveness of paper silvered on both sides by the fact that a portion of the metallic chloride with which the paper is impregnated is not reduced when the paper is silvered on one side only, and affects the sensitiveness.

Aprpos of this discussion, Herr RICHTER mentioned that he had detected no difference between papers silvered for three minutes only, and those left in the bath for half-an-hour; when, however, the length of this operation is reduced below the former time—say from one to one and a-half minutes—the paper will be found to be appreciably less sensitive, and to copy much harder.

At the conclusion of the meeting it was resolved to adjourn for the holidays; consequently the next meeting will be held on the 19th September.

Talk in the Studio.

A LEICESTER MANUFACTURE.—Very few people, excepting those in the trade, know from whence comes most of the English prepared paper for photographic purposes. Leicester supplies very large quantities, and many of the largest firms in the Kingdom are supplied by Messrs. Meadows and Son, of Hum-borston Gate, Leicester. No less than 5,000 eggs pass through the hands of those engaged, the whites only being utilised; and the enormous number of yolks are more than sufficient to supply Messrs. Dent's manufactory at Worcester, the yolks being in great demand for glove purposes. There is a demand for the yolks in Leicester for confectionery purposes; but the supply is more than being consumed, many being thrown away daily. Every sheet has to be bathed singly, and each pressed before the ream is allowed to pass out of the hands of the manufacturers. There are all kinds of tints; and the senior member of the firm being a practical chemist, and one of the best known among the members of the Pharmaceutical Society, brings his scientific knowledge to bear. It may not be uninteresting to know that a first-class hand—females only being employed, owing to their tender manipulation—can earn as much as 36s. a week; many can earn 20s., and even half-timers can receive weekly as much as 8s., and this without having the disadvantage of being in badly-ventilated premises. It is a trade which ought to be largely encouraged, considering the kindly manner in which the employers deal with their hands.

SUNSHINE.—At the Royal Observatory, Greenwich, last week, the duration of registered bright sunshine in the week was 21·8 hours, the sun being above the horizon during 90·4 hours.

FOUR HOURS IN THE DARK.—It is a humiliating confession to make—but geography is pitiless, and our national vain-glory must bow to its decrees—that for four hours in every twenty-four the entire territory of the United States is deprived of sunshine. As the sun goes down on our farthest Aleutian island, its morning rays are just lighting up the hill-tops of the western coast of Ireland, and the breadth of the Atlantic lies between us and daylight. To our Fenian citizens this may be another and cogent reason for annexing the dear little isle of the harp and the shamrock; but until it is done the exultant cry of the *Rocky Mountain Presbyterian*, that the sun never sets on the United States, must be admitted to be a trifle exaggerated. It does set every day, and, paradoxically, four hours before it rises. In the depth of our humiliation we may possibly console ourselves with the reflection that—though our British cousins can say with truth what we cannot—the sun really shines on the United States when it is up. We have to submit to four hours of sunlessness a day: England is lucky to get four hours of sunshine. So life has its compensations, and existence in the United States remains endurable, though we do not (geographically speaking) make quite so great a spread as we thought.—*Scientific American*.

ACTION OF LIGHT UPON BATTERIES.—*H. Pellat*.—A Daniell element whose copper is very clean is quite insensible to light. It is not the same if the copper is modified by oxidation or by the formation of a salt on its surface. Two Daniell elements were prepared as standards of electromotive force, the sulphates being contained in two concentric glass vessels. These elements, perfectly transparent, were kept for five months; the zinc was not affected, but the copper became coated with verdigris. Nevertheless, the elements retained their original force when the measurement was effected in the shade, but on exposure to the sun it was diminished by one-fortieth of its value. This variation ceased when the sun's rays were intercepted by a screen. This phenomenon is not due to a rise of heat, for the immersion of the battery in water at 50° produced no sensible effect, and a red glass which transmitted half the solar thermic radiations acted like an opaque screen. The luminous action renders the copper less positive.—*Chemical News*.

A NEW FLUORESCENT BODY.—According to the *Journal of the Chemical Society*, C. O. Harz has discovered a new fluorescent body in *spergulin*. This product occurs in the seed-coverings of the Caryophyllaceous plants, *Spergula vulgaris* and *S. maxima* (Anglice "Spurrey"). It is produced at the time when the seeds blacken and are nearly ripe. *Spergulin* is very soluble in absolute and aqueous alcohol. Viewed by transmitted light the solution appears nearly colourless, with a shade of olive-green; by reflected light it exhibits a dark-blue fluorescence. It has not yet been obtained in the form of crystals. It is very soluble in methyl alcohol, less so in amyl alcohol, and scarcely soluble in ether or petroleum. Concentrated sulphuric acid dissolves it, forming a dark-blue liquid. The fluorescence of an alcoholic solution of *spergulin* is maintained for more than a year if the liquid be kept in darkness, but is rapidly destroyed by the action of direct sun-light, and more slowly by that of diffused light. Small quantities of caustic alkalis, or alkaline carbonates, added to an alcoholic solution of *spergulin*, transform it into an emerald-green fluorescent body; and basic lead acetate produces a precipitate. The new compound contains 61·85 per cent. of carbon, 7·05 of hydrogen, and 31·8 of oxygen. It appears to be related to chlorophyll, and is probably closely allied to phyllocyanin. An alcoholic solution of the product showed strong absorption, almost entirely in the violet; and in this respect differs considerably from chlorophyll, phyllocyanin, and phylloxanthin. Mr. Harz is disposed to regard *spergulin* as a feeble acid, the acid salts of which, as well as the acid itself, exhibit blue fluorescence, the neutral salts exhibit green fluorescence, and the basic salts are destitute of fluorescent properties.

SANDTNER'S PAPER NEGATIVE PLATES.—Common glass plates are mounted with a tissue paper, so prepared on one side for the purpose that the paper adheres air and water-tight to the plates. At first sight the glass plate has the appearance of ground glass. The paper pasted on the glass forms the support for the collodion, upon which the picture is taken by the regular wet process without change. As soon as the picture, negative, or positive, is done, the paper is cut on the outside and the negative taken off.—*Anthony's Bulletin*.

CATCHING THE "EXPRESSION."—"A little too much repose about the mouth for it to be natural," was the remark of a husband to a photographer who had taken his wife's photograph.

To Correspondents.

S. V.—The principle of the chromograph is not patented, and we are not aware of any modifications or of any appliances which are the subject of patents. It is not a photographic process, although allied to and springing out of the process of photocollography. See our last YEAR-BOOK.

B. C. D.—Your suggestion to make the inside of the camera white, as a means of reducing exposure, is not new; it was made very many years, and was at that time, when the notion of using diffused light as an accelerator had not been discussed, much derided, the practice at that time being to exclude every ray of light, except those forming the image, most carefully from the plate. We think the plan of exposing the plate to a low light, either before or after exposure, a better means of using light as an accelerator, than the plan of whitening the inside of the camera, as the former method is most under control.

M. L.—An evenly diffused light all round the sitter is certainly not the best light for pictorial purposes, and if you observe a little, we think you will soon discover that you are in error in supposing it to be the most natural light, or that in which we usually see our friends. Ordinary sitting rooms lighted with windows illuminate the inmates by a side light, one side being fully illuminated and the other in shadow, except so far as it is illuminated by various reflected lights from the walls or furniture of the room. A high side-light is one of the most usual and natural lights, as well as the most effective you can use.

B. G.—The plan of showing the negative to the sitter is often troublesome, because many good negatives cannot be seen well by reflected light. If it is imperative to show the negative, and it be so fully exposed as to show no positive image, apply a solution of chloride of gold, about one grain to an ounce of water, and watch the image at the back of the glass. It will gradually assume a positive appearance; then wash at once, and show it. In this stage it looks well, and gives a good idea of the likeness.

X. Y. Z.—We have never seen blisters in slightly albumenized paper, only on very highly albumenized samples. It is not, however, a necessary attendant upon highly albumenized paper. It requires care that the albumen shall be coagulated right through the substance of the film. Long floating on the silver bath will effect this; floating the paper, prior to exciting, on hydrochloric acid for a second, back downwards, is said to answer; immersing the print in strong alcohol will effect it; adding alcohol to the hypo bath is said to be efficient in preventing blisters.

TROUBLED.—The spots on your prints are caused by the particles of bronze powder used in the so-called gold printing at the back. We have warned photographers many scores of times against the use of such cards, but some persist in the pernicious practice.

ONE WILLING TO TRY.—Opinions amongst experts differ as to the relative advantages of alkaline development, and iron, for emulsion plates. Certainly, the best gelatine negatives we have seen have been developed by alkaline pyro. You need not trouble yourself about the prejudice to which you confess, as the alkaline method of development was not first discovered by the person you name. The controversy is not worth reviving. But our pages contain the record which leaves the question beyond a doubt.

B.—The white metal used for gas pipes is not to be trusted for a still. The worm should be of copper.

J. C.—See a letter on another page.

CHROMOTOPILOS.—So far as we know, anything which would dissolve the coagulated albumen in the whites would dissolve it equally in the darks, holding the reduced silver salt forming the picture.

Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

- MESSRS. TURNER & DRINKWATER, BARNSBURY PARK,
Photograph of Prince and Princess of Wales.
Photograph of the Earl of Yarborough.
Photograph of Prince and Princess of Wales, and twenty-three others.
- MESSRS. J. RUSSEL & SONS, CHICHESTER,
Three Photographs of Dr. Lightfoot, Bishop of Durham.
- MR. J. NORRIS, BIRMINGHAM,
Three Photographs of Rev. Morley Punshon and Wife.
- MESSRS. APPELTON & CO., BRADFORD,
Two Photographs of Father O'Haire.
- MR. M. WANE, EDINBURGH,
Three Photographs of Dr. Littlejohn.
- MR. A. G. TOD, CHELTENHAM,
Two Photographs of Rev. H. Kynaston.

The Photographic News, September 26, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE EMPLOYMENT OF PHOTOGRAPHY BY LIGHTHOUSES.—

THE LATE DR. SCHULZ-SELLACK.—DICHROMIC VISION, OR COLOUR-BLINDNESS.

The Employment of Photography by Lighthouses.—In France they have a photographic establishment attached to the lighthouse department, or *Service des Phares*, and we remember, at one of the Paris exhibitions, seeing a number of interesting applications that were made of photography by the establishment in question. We were reminded of the subject the other day in a walk taken to Cape Wrath lighthouse, where photographic sketches were exhibited of the proper size that a lighthouse flame should assume when it is in proper order. The Argand lamp was in use in the lighthouse, as many as twenty, hung around an apparatus that revolved, constituting the beacon; and the keepers were instructed to trim their lamps so that the flame should coincide in shape and size to the photographs hung up for their guidance. We have no doubt other lighthouses, besides the one at Cape Wrath, have similar photographic records, so that any of our readers who may feel interested in the subject need not go all the way to the very north-western point of Scotland. At the same time, if they do, there is much they will find on the way to admire. It is the first holiday tour for many years that we have not carried a small camera and plates with us, and, in the end, the weather proved so uncertain—to pass a mild remark upon it—that we were not sorry to have foregone the occupation of photographing for once. At the same time, there are some magnificent pictures to be made in the far north of Scotland. The big masses of red granite about Cape Wrath itself; the wild, rocky headland of Farris Head; the lovely Loch Eribol, from the head of which and from the western shore rises a huge range of lofty peaks; the view from the north of the coast line that stretches south; the silvery grey cliffs that border every bay and inlet, like bright filigree edging the green sea; the coralled lochs, margined by brown sea-weed; the green-shored lake Assynt and rare Loch Maree. If one only had fine weather every day, what a paradise those north-west Highlands would be! And if—there always are ifs, unfortunately—fishermen would not turn the little inns, where they are to be found, into boarding houses, and thus leave the ordinary traveller to make shift elsewhere. Perhaps the most comfortable of resting places within a hundred miles of Cape Wrath is Cape Wrath lighthouse itself, where the keepers are well looked after in house and home by the Commissioners of Northern Lights. We have to thank the head keeper and his wife for hospitable shelter and hospitable treatment during a storm that threatened at intervals to blow us, weighted as we were with a full knapsack, in the direction of the Arctic ocean. It was not even safe in the lantern, it seemed to us, and here our good friend showed us all the secrets of his craft. There was no dioptric lens, such as are employed in first-class lighthouses—and, we believe, also, by Mr. Vander Weyde in his electric light studio—but simple Argand lamps, with reflectors behind them. These reflectors were wonderful to behold; they were huge screens of solid silver, polished *à merveille*, with a four-inch focus. Each reflector was valued at £40, and as there were twenty lights, silver to the value of nearly a thousand pounds was to be found at Cape Wrath. Petroleum was burnt, and the light shed was sufficiently luminous to pierce the gloom over the sea for a distance of twenty miles. But the brilliancy of the light depends in great measure upon the accuracy with which the flames are set—that is to say, upon making each lamp do its utmost without smoking—and as a guide to this, the photographs of lamp flames, showing exact size and shape, with which the keeper is provided, prove exceedingly useful. In the photographic establishment in France the sensitive plate

is employed frequently to test the photometric value of certain lights; but, we believe, the Trinity House in this country do not avail themselves of any test of this kind.

The late Dr. Schulz-Sellack.—We sincerely regret to hear of the death of Dr. Schulz-Sellack, which Dr. Vogel announced in our columns last week. The number of practical chemists that occupy themselves with photographic matters is already so limited that the loss of one of them is keenly felt. Although but a youthful chemist, Dr. Schulz-Sellack had made considerable study of the theory and practice of photography, and both prior to his departure to America and subsequently, the young German chemist contributed notes of considerable importance. It is painful to find that so much talent and industry were employed by its owner with such lack of success. Here we have a clever chemist compelled to assist in a New York studio in retouching negatives, in order to gain a livelihood. Even in this capacity he appears to have failed, for soon afterwards we find him in the Argentine Republic, whither he proceeded to seek his fortune. A year afterwards he returned to Berlin, as poor, evidently, as when he left the Fatherland, and tried once more to get a living out of science. But all in vain, and apparently he and his family drifted from bad to worse until, in a fit of despondency, his adopted father and mother, with himself, agreed to put an end to their struggles by suicide. It was truly a fight for life, in which humanity was worsted. Three or four years ago the readers of this journal were tolerably familiar with his name, for the communications of Dr. Schulz-Sellack were always worthy of translation. The last paper communicated, if we remember rightly, was on the subject of securing a more rapidly printing silver paper, and this the worthy doctor succeeded in doing by employing iodide in connection with chloride. But the paper was never manufactured commercially in this country, and hence little good came of the suggestion. We shall sadly miss Dr. Schulz-Sellack from the slender line of photo. chemists.

Dichromic Vision, or Colour-Blindness.—Colour-blindness, as it is called, or the incapacity to distinguish one colour from another, is again exciting attention through the publication of a work on the subject by Dr. Jeffries, of the United States, which book has been ably criticised by Mr. William Pole. Most authorities would seem to be agreed on the subject that colour-blindness (so-called) is due to a person being incapable of appreciating two out of the three cardinal colours; they enjoy only dichromic vision. Generally, in these cases, they cannot appreciate red, and thus only see violet or green. One cannot help thinking that there is in the human eye a qualitative appreciation, such as that possessed by sensitive films. We have some photographic films, for instance, which appreciate highly the red end of the spectrum, and others, again, which are acted upon but very slightly by the least refrangible rays. Since the appreciation of light by the eye is, in the main, due to a substance called visual purple, which lines the membrane of the eye, and acts in every respect like a photographic plate, this view seems to be strongly supported. In this case there would be a parallel between the eye and a sensitive film, for we have it on Dr. Jeffries' authority that some colour-blind people can appreciate red, but fail to distinguish one of the two other colours. Everybody, apparently, whether colour-blind or not, sees a distinction between the various colours, but that distinction is not recorded on the retina in every case in the same way, and for this reason, no doubt, it is that, although a great deal has been talked about the liability to accident on railways that is engendered by the employment of colour-blind engine-drivers, it is no less a fact that there never has been recorded an accident due to a man mistaking the red light for a green one. Dichromic vision, or colour-blindness, is more inherent to men than women; one man in every twenty-five has dichromic vision, while in the case of girls and women the defect amounts only to 0.2 per cent.

PHOTOGRAPHY AND THE SUN'S SURROUNDINGS.*

OBSERVATIONS during the eclipse of July, 1878, considered in connection with recently acquired knowledge respecting meteor systems, open before us a new and very interesting page of the book of nature. It remains still to be read, and many years will be required for its thorough study, but even now we can recognize the general character of its contents. We refer to the recognition by Professors Newcomb and Langley of an extension of faint luminosity to a distance of about 6 deg. on either side of the sun. Other observers also recognized either as great an extension of coronal luminosity, or such peculiarities of shape in the luminous region around the sun as show that under slightly more favourable conditions they would have seen all that Newcomb and Langley saw.

It may be well now, when the attention of astronomers has been directed afresh to meteoric systems, to re-examine the important series of observations made during the last eclipse.

Hitherto in eclipse observations no luminous appearances have been satisfactorily recognized at a greater distance from the sun than perhaps about two of his own diameters, or some $1\frac{1}{2}$ million of miles. Unquestionably rays have been traced to a greater distance which could not possibly be regarded as other than solar appendages, including under that name all phenomena, whether coronal, zodiacal, cometic, or meteoric, which have relation to the sun, as distinguished from luminous appearances having their origin in regions not farther away than the moon. Any long ray extending from the eclipsed sun and visible in a constant position during totality must of necessity be due to a solar appendage. Such rays have been indeed referred to matter nearer than the moon; and as our own air most certainly could not explain them (for not a particle of our own air within 6 or 7 deg. of the eclipsed sun is in sunlight at mid-totality), scattered particles of matter travelling between the earth and the moon have been imagined in explanation of these long rays. An ingenious experiment was devised in illustration of this theory. If an irregular plug be inserted into a round hole (or a round plug into an irregular hole) in the shutter of a darkened room in such sort that the sun's light enters the room through the interstices, appearances very much resembling those long rays will be seen where the solar rays fall on the dust-laden air of the room. In this experiment the plug represents the moon, the sun is himself (as Launce would have said), and the air in the room represents the cis-lunar matter of the theory. But those who have adopted the theory and accepted this ingenious illustration appear not to have observed a trifling distinction between the circumstances of an eclipse and those of the suggested illustration. The shutter is a rather necessary adjunct to the experiment. If the sun's rays only pass in through small interstices to illuminate the air in the room, the radiating streaks are observed; but if they fall freely into the room (save where a small opaque disc is suspended in the window, to represent the moon), no such rays can be seen. Now in the eclipsed the plug is represented well enough by the moon; but the shutter is omitted. The omission is somewhat important. To say the truth, no one (certainly no mathematician) who takes fully into account the actual circumstances of a total eclipse of the sun can fail to perceive that a long ray seen in an unchanged position during the whole continuance of total eclipse must certainly belong to regions far beyond the body of the moon. Now since such rays have been seen on several occasions, we have in one sense satisfactory evidence of the existence of solar appendages outside the corona. But it has been held that until such rays have been seen and identified by at least two observers on the same occasion, they must not be treated as scientific realities, however certain the individual observers of such

features may have been that their descriptions were exact. It had so happened that evidence of this kind had not hitherto been obtained. Different observers had seen long rays on the same occasion; but their accounts differed widely. Often, indeed, it seemed impossible to believe that the same rays had been observed. From what we have since learned, however, respecting the corona itself, we perceive that in the excitement of an eclipse observers are capable of the wildest errors of description and delineation. Until "the retina which never forgets" had viewed the corona, it was objected that an object which different observers saw under entirely different aspects could not possibly be a real solar appendage; but photography has shown that the discrepancies were due to inexact observation. They were found to have no existence in the corona itself as photographed from widely separated stations. If photographs of the long rays could have been obtained, the discrepancies in their case would doubtless have been removed in like manner. But, unfortunately, the lustre of these long rays is exceedingly faint, and hitherto they have not been shown in any photograph of an eclipse. Hereafter greater success may be obtained in this direction, possibly by doing what was strongly urged long before the late eclipse—devoting, namely, the whole duration of totality to obtain one really effective photograph. There is no longer the slightest advantage to be obtained from taking several photographs, for the doubt which formerly rendered that course necessary (the suspicion that the corona changes during totality) is no longer entertained. For the present, however, we have only drawings or descriptions to deal with. It is the distinctive feature of the observations made in July, 1878, that these drawings and descriptions show most satisfactory accordance. We propose to consider a few of them, taking first those which give to the rays or luminous projections their least extension.

In the first place, we take a drawing of Mr. J. N. Lockyer. In this drawing the black body of the moon is shown surrounded by a narrow ring of light, the inner corona. Outside the ring are three projections, nearly in the ecliptic. (It is important to notice this, for the axis of the zodiacal light is at all times nearly in the ecliptic.) On the eastern side there is one projection, shaped like a long isosceles triangle, the base of which is on the moon's edge. On the western side are two nearly equal projections, bearing somewhat the same relation to the single eastern one that the two sides of the tail of a wind-vane bear to the pointed head. The three projections are not very unequal in length, the longest extending about $1\frac{1}{2}$ diameter, or about 2-3ds of a degree, from the sun's edge. This would correspond to rather more than 1,000,000 miles. The resemblance to a wind-vane, says Mr. Lockyer, "was almost perfect (the corona), being pointed at one end, and bounded by parallel edges at the other;" "others," he adds, "saw a resemblance to a fish's tail." The breadth of the wind-vane in his picture is about 3-4ths of the sun's diameter. It is worthy of notice that in the telescope the streamers vanished utterly. "Not a shred of them was left." This shows the extreme faintness of their light; the slight absorption of light by the glass of the telescope (a $3\frac{1}{2}$ -inch Cooke) sufficed entirely to obliterate these delicate solar appendages.

General Myer, the head of the Army Signal Service, and commonly known in America as "Old Probabilities," because the weather forecasts daily published appear under that heading (without the adjective), saw the corona from the summit of Pike's Peak, 14,200ft. above the sea level. He described the corona as showing five radial lines of a golden colour, beyond which in the direction of the ecliptic "were prolonged bright silver rays." This was seen only with the naked eye. "In the telescope the appearance was quite different; a layer close to the sun only, of a light pink colour, was seen; the long bright silver rays had disappeared." It is worthy of notice that General Myer had

* *The Times.*

on a former occasion seen the long coronal rays in circumstances almost as favourable. He watched the progress of the eclipse of 1869 from the summit of White Top Mountain, near Abington, Virginia, 5,530ft. above the sea-level. On that occasion he saw in the telescope only an aureola of clear, yellowish, bright light, closely surrounding the moon's disc, and fading gradually into the tint of the darkened sky, "with a slight tinge of pinkish green" (a colour almost as difficult to imagine as the "gris rouge" mentioned in Molière's *L'Avare*). But to the unaided eye the eclipse presented "a vision magnificent beyond description." Around the full and intensely black disc of the moon there was an aureola of a soft bright light, "through which shot out, as if from the circumference of the moon, straight, massive, silvery rays, seeming distinct and separate from each other, to a distance of two or three diameters of the lunar disc, the whole spectacle showing as upon a background of diffused rose-coloured light." It is specially interesting to note the arrangement of the long rays on that occasion. For the eclipse of 1869 occurred on the 7th of August, the time of central eclipse for the whole earth being 9h. 46m. p.m. Greenwich time; and the eclipse of 1878 happened on the 29th of July, the time of central eclipse being 6h. 23m. p.m. Greenwich time; so that the two eclipses occurred at the same time of the year within nine days 23 minutes. The actual directions in which the observers of the two eclipses looked at the sun were inclined to each other in an angle of less than 9 deg. So that, in point of fact, we may say that very nearly the same view was obtained of the sun's surroundings on both occasions, apart from any changes which may have occurred in the interval. If it should appear that the long rays presented the same general aspect in 1869 as they did in July, 1878, then the inference would be that they are objects not changing as the sierra, the prominences, and the inner corona change. We could not safely conclude that this is the case; but it would be the most probable inference. Now, General Myer, in 1869, said that the silvery rays were longest and most prominent at four points of the circumference, two upon the upper and two upon the lower, portion, apparently equidistant from each other, giving the spectacle a quadrilateral shape. The angles of the quadrangle were about opposite the north-eastern, north-western, south-eastern, and south-western points of the disc. The description is not exact, but it accords well with the conclusion that two of the rays (north-eastern and south-western) were in the ecliptic, and the other two at right angles to the ecliptic. If so, there seems good reason, as will now appear, for believing that the rays seen by Myer in 1869 may be the same, or, rather, belong to the same cosmical appendage of the sun as those seen by him and by other observers in July, 1878.

(To be continued.)

THE TIMES ON AUTOTYPES.*

"IN Mr. Elmore's work, as already mentioned, the monochrome was entirely painted by the artist himself; and the whole system of autotype reproduction is open to the objection that much very valuable time must in this way be consumed. Even from a commercial point of view, however, such time is by no means thrown away; since the monochrome itself, in proportion to its size and finish and to the reputation of the artist, possesses a money value which in many cases might adequately repay the labour incidental to its production. Again, there will be instances in which the painting of the monochrome may be only partly done by the artist himself, and partly under his direction; and an illustration of this is furnished by the reproduction of Mr. Poynter's painting, 'Israel in Egypt,' which was exhibited at the Royal Academy in 1867, and which, in the same summer, furnished Mr. Tenniel with the subject of one of

the best remembered cartoons in *Punch*. This painting was purchased by Sir John Hawkshaw, who for a long while retained it for his private gratification, and refused to send it to any of the various private loan exhibitions which from time to time were set on foot. He was, however, induced to allow it to go to the Exhibition last year at Paris, where it held a conspicuous place among the examples of British art. As most people will remember, it was a picture of many figures, clear sky, intense light, and vivid colouring; and by direct photography it would have been impossible to obtain a reproduction of it which the artist could have accepted. By the intervention of a monochrome, such a reproduction has been obtained with conspicuous success; and although the monochrome was not entirely painted by Mr. Poynter, he has worked himself upon the whole of the figures, and has supervised and certified to the rest. The result is a very striking and accurate record of a work of art of a high order of excellence.

"A less successful example, and one which shows that the mind, at least, if not the hand, of the artist must be given to the work, is furnished by the 'Royal Garden Party at Chiswick' of M. Desanges. The autotype of this picture would, nevertheless, elicit commendation if we had not better specimens of the method before us; and it is said that, although the monochrome was revised and touched by M. Desanges, he was not able to devote to it the time and care which were required for the thoroughly effective rendering into black and white of the numerous portraits and the brilliant and varied colouring which were contained in the groups of persons represented. The result does not in any way tell against the process employed, but merely serves to emphasize the necessity for the employment of adequate care and skill in one of the most essential of the steps by which the desired effect is to be brought about.

"Where the autotype is employed for the reproduction of originals in black and white, whether these are in charcoal, grisaille, chalk, pencil, ink, or any other medium, the copies imitate the originals so closely that very careful inspection would be required in order to distinguish between them. Of such copies, a very large number by various artists have now been published, and they bring correct and finished studies of nature within the reach of all classes of the community.

"Besides the works of the moderns, the Autotype Company has also published a large number of copies of drawings by old masters, such as those in the Sistine Chapel; and these, many of which are of considerable size, while all are extremely moderate in price, lend themselves admirably to many purposes of decoration. We have seen walls almost papered with them, the subjects being carefully selected with a view to harmony of general effect, and the pictures separated only by slight beadings. In some instances they might no doubt be sized and varnished so as to require no glazing, and to admit of being cleansed from dust without sustaining injury in the process.

"In these days of general art cultivation, when so much is being done, and on the whole with so much success, to spread abroad a love for the beautiful among all classes, the combination of scientific manipulation and commercial enterprise displayed by the Autotype Company deserves hearty recognition as a most important aid in the good work. That it is a good work we need not now stay to argue, for the position will be generally admitted; and we think it must also be admitted that pictorial art, as that which is more readily appreciated by the comparatively untaught than any other, is entitled to claim the first place as a means of elevating the tastes and quickening the perceptions of the bulk of the community. It is worthy of the consideration of those concerned in education whether they might not do something to render the work of the Autotype Company more widely known—whether, for example, it might not be possible to give well-selected pictures as prizes in Board and other schools, and to carry out on a wider and more extensive scale what is done by the Art Union for works of a different and

* Continued from p. 446.

in some cases of an inferior class. In Manchester there is an 'English Picture Publishing Company,' which issues to its subscribers single works, or sets of works, as the case may be, for a guinea, a guinea and a half, and two guineas; and for this Company the Autotype Company has already produced paintings by F. M. Brown, C. W. Cope, R.A., F. J. Shields, William Blake, Wallis, and Rossetti, besides having others by Rossetti, Burne-Jones, and other artists in preparation. The distinguishing character of the Autotype reproductions is that they are cheap and absolutely faithful copies of originals, which may themselves be of the very highest excellence; and they are therefore especially adapted for all situations in which the moderation of their cost is an important element, and especially for all in which it is desirable, for educational reasons, to keep before the eyes, either of children or of adults, the most perfect representations of natural or of ideal beauty."

SO-CALLED SPIRIT PHOTOGRAPHS.

THE *Rochester Union* is puzzled by the claims of "Spirit Photography." It says:—"It may not be generally known that for the past two years spirit photographs have been taken in this city, some of them being certainly extraordinary productions. The power granted by the inhabitants of the unseen world to reproduce their features on a camera is not given to every one, and in this section, so far, Miss Hedley, who runs a photograph gallery on State Street, has a monopoly of what is likely to turn out a most lucrative business. Hearing of Miss Hedley's gift in this line, a citizen, being of a curious turn of mind, determined to see what there was of it. Visiting the gallery, he told the proprietress that he understood she took spirit photographs, and he wished to test her skill.

"I am not certain I can succeed," was Miss Hedley's response, 'but we can try.'

"Would you allow me to pass my handkerchief over the glass before you prepare it for the camera?"

"Oh, certainly, as many times as you wish."

The visitor carefully rubbed the glass on both sides, after which he stood while the collodion was put on, and when the glass was put in the camera he took his seat. The cap of the instrument was removed, and in a few minutes the picture was taken. On the negative being taken out and held up to the light, some faint forms around his chair was visible.

"What are those marks on the glass?" asked the citizen.

"Those are faces of some persons you will no doubt recognize when printed plain."

"Well, when can I obtain a proof of the picture?"

"Oh, by to-morrow."

"No; I intend to have a proof while I wait, as I do not intend there shall be any humbug in this matter."

"After waiting about two hours the proof was taken, toned, and placed on a card. It was then that he recognized in the most distinct manner the faces of his sister and child, who had died some time previous. Not wishing to be made the victim of an optical delusion, he put the card in his pocket, and on going home, showed it to his wife, without saying a word. She immediately recognized the faces on the print, and her husband then told her how it was taken. It was shown to friends of the family, who also recognized them."

DOUBLE ALBUMENIZED PAPER.

THE Editor of *Anthony's Bulletin*, referring to the use of double albumenized paper, has some good hints on blisters. He says:

"Having received from one of our customers some of the Dresden paper which was complained of as blistering badly, we sent some sheets to the manufacturer, who returned some prints made upon it perfect in every respect. In order to provide our customers with everything necessary for success in using this paper, we at once wrote to the manufacturer for the formula or mode of working. This will be found below. It will be observed that while

they do not prescribe a silver bath as strong as is generally used in this country, they nevertheless do not fume the paper, nor do they use the acid wash before toning.

"INSTRUCTIONS.

"*Silver Bath*.—40 grains to the ounce of distilled water. Filter the bath always before using it, and stir it after each sheet has been floated. Float one to two minutes.

"Toning Bath.

No. 1.—Acetate of soda	...	...	60 grains
Distilled water...	...	...	1 quart
No. 2.—Pulverized borax	...	...	45 grains
Distilled water...	...	...	1 quart

Mix equal parts of these two solutions an hour before using, and to every 2 ounces of this mixture add 1 grain of chloride of gold, dissolved beforehand in a little distilled water.

"Fixing Bath.

Hypo-sulphite of soda	...	...	3 ounces
Ordinary drinking water	...	...	3 pints
Time of fixing	...	...	15 minutes

"The temperature of all the baths must be uniform. Silvered papers and finished copies must not be dried quickly. Mount the copies while wet.

"In case after using the above baths the copies show show blisters, the mode of obviation is as follows:—

"*Unfailing Means for Preventing Blistering with our Double Albumenized Paper*.—The copies after leaving the toning bath must be washed several times with pure water, and then placed one by one in a solution made by adding to one quart of water one drachm of pure muriatic acid. In this bath the prints are to soak from two to three minutes, being kept constantly in motion, and afterwards they are to be washed again from two to four minutes in pure water to free partially from the muriatic acid. On hot days this washing must be continued longer than on cool days. After this the prints are to be put in the fixing bath. Should the prints after fixing show a yellowish tint (which, however, will scarcely ever occur), this can be prevented by passing the prints quickly, after being drained of the excess of muriatic acid wash, through a solution of water and ammonia, $1\frac{1}{2}$ drachms of ammonia to one quart of water; then rinse in water, and place at once in the fixing bath. By this means any alteration of tone is prevented."

A RAPID PROCESS FOR DIRECT PRINTING AND ENLARGEMENTS.

BY LEIGHTON PINE.*

PLACE in a half-gallon bottle an ounce of nitro-glucose, and pour over it two ounces of sulphuric ether. When the glucose is dissolved, add to it an ounce of chloride of ammonium dissolved in as little water as possible, with sufficient strong alcohol afterwards added to make in all forty-eight ounces of solution. The addition of forty-eight grains of citric acid to the above mixture completes the preparation of the salting solution, which is applied to the paper by means of a brush, the operation being quickly performed. When dry, the paper will keep ready for exciting, for several months.

Paper thus salted may be employed either for direct printing in the pressure frame, or for developed enlargements.

For ordinary printing the paper should be floated for about a minute on a sixty-grain silver bath. When dry it is exposed to the fumes of ammonia for about fifteen minutes, and then exposed under the negative.

The author of the process says that with paper so prepared he has obtained from a clear intense negative, in sunshine, a print in half-a-minute. "It was clear, round, and brilliant, and the details were wonderfully soft and deep. Altogether it was just the kind of print operators strive to make, and, when made, feel justly proud of their success." The sensitiveness implied in the above must strike one as being indeed very great. The toning and fixing are effected as usual.

When the paper is intended for developed enlargements

* *St. Louis Practical Photographer.*

a greater degree of vigour and roundness is obtained if the quantity of citric acid in the glucose salting solution be doubled. It is excited by floating it upon a forty-grain silver bath, which before and after using should be placed in the sun, in order to cause the organic matter to be deposited.

The exposure is continued until the image be faintly visible, and the print is developed by the following—

Pyrogallic acid	...	...	...	1 grain
Citric acid	...	...	...	1 "
Water	...	...	...	1 ounce

If the exposure has been properly timed, the development of the print will be completed in little over a minute, after which it is washed, toned, and fixed by the usual means.

METHOD OF OBTAINING PURE WHITES IN FERROTYPES.

A WRITER in the *St. Louis Practical Photographer* says:

"Ferrotypes do not always exhibit the pure silvery white that operators desire, the colour being often ashy or ochereous, to the great detriment of the picture. In some experiments we have obtained proofs which appeared more brilliant than most of those generally seen. Our process, however, can boast of nothing new; it consists in the addition of a certain quantity of sulphuric acid to the iron developer, which enters into a host of formulæ already given; and if we have had better results, it is due to our employing, instead of an empirical formula, one based upon the elementary laws of chemistry.

"To obtain a brilliant metallic white, it is necessary that the molecules of silver, which are deposited and form the image, should be as pure as possible; we must, therefore, inquire what takes place when we develop a picture.

"The oxide of silver in the nitrate is decomposed by the sulphate of the protoxide of iron, and while the silver is reduced to the metallic state, the sulphate of the protoxide passes to the state of sulphate of peroxide. But the sulphate of the peroxide of iron thus formed is basic and insoluble; it envelopes, as it were, the molecules of silver deposited at the same time with it, and communicates to the silver an ochereous tint. Instead of the insoluble basic peroxide of iron we ought to obtain the neutral sulphate, which is soluble in water; but this is formed only when we add to the iron solution a certain quantity of sulphuric acid.

"In practice, and to have round numbers, we may say in general terms that the quantity of sulphuric acid must be equal to one-fourth of the sulphate of protoxide of iron.

"The following formula may be given:

Water	...	...	...	12 ounces
Alcohol	...	...	...	5 "
Acetic acid	...	...	...	6 "
Sulphate of protoxide of iron in crystals	...	...	...	4 "
Sulphuric acid (by weight)	...	...	...	1 ounce
" " (by measure)	...	...	...	5 to 8 ounces

THE WAY TO PHOTOGRAPH CHILDREN.

BY S. L. PLATT*

Too little attention is paid to this branch of business. The artist is usually very busy when the child is brought, and arises at the squall of the child, and begins to scratch his head, then, after a heavy sigh, starts for some old cubby-hole, hands out the remains of a chair resembling the one used by Adam in his infancy. The mother looks at the chair with audder, and claps her hand over the child's mouth: the artist goes for a duster, and an old coat for a covering. After the chair is dusted and covered the best he can, he seeks some branch of amusement by the way of blowing an old whistle, screaming, shaking keys, or picking the last string of some old fiddle. This, in time with the child, is music for the blind only, and to all looking on seems silly.

In order to do away with the above nonsense, take an ordi-

nary high chair, and fix the back with a stationary curtain, so it is straight, up high enough to support the child's head; pad it so the back will keep the child from moving sideways; cover with a nice spread; then focus the instrument on the back; have the baby to sit, so it will bring the glass in focus at that point. After this is done, take your position back of the chair, and as soon as the mother places the child in, fasten him with a cord; then get ready for the exposure. Don't appear to have seen the baby, and he will not be afraid. Let the mother seat herself by the side of the child, and hold her peace. Then light a torch, made by soaking a cork in oil, on the end of a wire. As soon as you see the child's attention is drawn by it, make the exposure. Never let a child know anything is required of it, but go on about your business, and it will be sure to have its eyes on you.

When a child is to be photographed, old enough to understand what you say to him, do not let him know you wish any more than to show him how pictures are made. Have him sit or stand, as you choose; then take a small mirror, three inches wide, five inches long, and hold above the tube of the instrument, and call his attention to it. Show him his picture in it, but do not look toward him; you can watch his movements in the mirror; that is what it is for. When he is still, make the exposure. He will not know he has had a picture taken, nor when.

If you look at a child of that age, and try to get his attention, he will look and appear awkward. It would be rather difficult for a grown person to sit and be stared at, and booted at while sitting.

Now, always keep a small mirror in the gallery for this purpose, as it will be of great use to you.

FOR RETOUCHING.

BY J. C. ELROD.*

TAKE a window, one that you can use for that purpose with comfort and convenience, get your carpenter to fit nicely a board wide enough to work on the largest negative you make, but have the board wide enough to hold a 11 by 14 negative, stripped or headed on the bottom edge to keep things from slipping off; fasten the board at the proper angle, so that you may stand and the height from the floor will be such that your arms from elbow to the wrist will lie at ease in the position you wish them, so that you may stand erect and work with ease. Now cut a hole so as to admit a 4 by 4 glass set in the middle of the board, which reaches across the window, securely fastened at each end, the upper edge of the board as near the glass as the sash will allow. Now cover the board with green baize, cutting away the cloth over the 4 by 4 glass over which you are to do your retouching. Exclude all the light coming through the window above and below your retouching board, except underneath the board, right in front of the 4 by 4 glass; under the glass suspend or swing, by means of screw eyes and strings, another small board just large enough to lay a sheet of writing paper on, and so adjust the position of the under small board that when the white paper is on it, the light will reflect just where you want it when retouching. Remember no light must come in through this window, only through the light of glass under the retouching board, so as to fall on this white paper in position. You may have a stool so that you can sit or stand while retouching. Windows facing the north are best for this purpose. If you use a window facing south, east, or west, screen off the sunlight with white paper, so that the light you work by shall be soft and uniform. The light must be excluded also from your back, by curtain, screen, or otherwise, so that you see only the light passing through the negative. The retoucher may then stand or sit at will, holding his or her chest erect, thereby working with ease and comfort, doing twice as much retouching in a day, doing it better, and feeling less tired at the end of the day's work than is possible with one of those little movable retouching boards so commonly used.

* Philadelphia Photographer.

* Practical Photographer Almanac.

The Photographic News.

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TRADE UNIONISM IN PHOTOGRAPHY.

THERE have been various symptoms manifested of late years of a tendency to establish trade-unionism in photography. We have noticed indications, on the part of some, of a desire to convert the Photographers' Benevolent Society into something of the kind. We have no intention of entering into any discussion of the general principles generally cultivated in trade-unions, beyond remarking that, so far as we have had opportunity of noticing, they are generally tyrannical and unfair, destructive of personal freedom and self-respect, and the worst form of the exploded principles of protectionism. But apart from the question of right or wrong in trade unionism, we may throw out a passing warning of the danger of importing anything of the kind into the Benevolent Fund. Established entirely for the benefit of the unfortunate assistant, it is at present largely assisted by the contributions of honorary members, and nothing could be more suicidal than an attempt to use against the employers the machinery they have helped to establish.

The principles of the trade-union are, however, proposed for adoption in America in a very different manner. A contributor to the *St. Louis Practical Photographer* proposes a combination of professional photographers against the public for the maintenance of prices. Those photographers who do a cheap trade are to be ostracised, or, in familiar parlance, "sent to Coventry," by the profession generally. Nothing is more natural, perhaps, than that a high-class photographer, conducting his business in the most respectable style, should look with contempt upon, and refuse association with, the cheap-Jacks of the profession. But to form a combination to influence or control the low-priced brother will scarcely bear examination. It is an attempt to control his liberty of action. Possibly his work is only worth a low price, and he is possibly aware of it. But the greater iniquity would be if he did good work at a low price. This is the man whom the trade-unionists would especially put under control! The writer in the *Practical* is aware that the position of the protectionist is assailable, and endeavours to vindicate it. He says:—

"I believe that as the demand is to the supply, so will the price be. I think that proposition is invulnerable. But as the control of the supply is often resorted to to raise prices (the corners in the grain market, for illustration), would it not benefit our craft, without injuring the public, to raise a corner in our production by doubling the rate for cheap work? Is there an artist in St. Louis, or New York, or any other city, who has doubled his income by reducing his price one-half, say from three dollars a dozen to \$1.50 for cards? To double his income his business must increase three-fold, and who has ever done this? Now, my idea is to organize a National Photographic Alliance—call it by what name you

please—and pledge ourselves not to make a card-photo. below three dollars per dozen; not to recognize any one who does so, and not to deal with any stock-dealer or other person who will supply goods to any one who works below that rate. I would not fix that as the price, but as the lowest price. Three dollars a dozen; half-dozen, two dollars. No sitting for ferrotypes below fifty cents, nor less than twenty-five cents for a picture, no matter how many are taken.

"At first sight it seems as if this could not possibly be accomplished, and there is but one way in which it can be done. That way I have pointed out—stop the supplies. That is the secret, and that is certain. Utterly refuse to recognize any so-called artist who works below that price, and buy from no dealer who does. No fear of outsiders adding photographic goods to their stocks if only the shysters will buy from them. And if all the artists in the Union will raise their prices to the standard given, three months will see every one of them doing a better paying business than he is doing at present, and very little less in amount. No doubt stock, as well as prices, would advance, but the advance in stock would never be felt by the artist. It could not be done in a day. Some parties would refuse to join such an alliance. Some stock-dealers would supply them with goods; but if it were once generally adopted, the stock-dealers could not afford to hold out and lose their best customers; and when the cheap-Johns ran out of stock, and found that they could not replenish without a certificate of membership from the local secretary of the Alliance, there would be some tall talking, but it would end by their joining the Alliance or quitting the business.

"There is no bulldozing in this idea. Every man has an inalienable right to say, I will not deal with you except on certain conditions; or, I will not recognize you while you follow your present course. In fact, we all exercise just this right in our social habits. If we make a call and are not treated as we think we should be, we do not go back. If a person calls on us whose company we do not want, we decline to receive them, or treat them in such a manner as to prevent a repetition of their visit. Forcing a party to acquiesce with my ideas under fear of bodily harm or injury to their property is a very different thing from simply withdrawing intercourse while they continue in a given course of conduct. In the one case the man has no choice; in the other his freedom of action is not interfered with. We simply let him alone.

"The greatest good for the greatest possible number, is the basis of law in free countries.

"We try to prevent crime by the punishment of criminals. In doing so we necessarily interfere with their liberty of action when they choose to do wrong, and the good of society at large demands that this should be so. When a party deliberately injures our business by cutting down prices below living rates, we have a perfect right to use any and all legitimate means to coerce them back to a legitimate line of action. Ostracism is the only course open to us, and I, for myself, will openly urge its adoption."

The sophistry of this mode of arguing is very apparent. The writer assumes that he whose charges are too low for photographers is guilty of crime, and that it is legitimate to use coercion to regulate prices. We strongly recommend the maintenance of a thoroughly remunerative scale of prices, and would gladly see an agreement amongst respectable photographers to effect such an end; but it should be perfectly voluntary, and withholding involve no penal consequences.

Critical Notices.

LANTERN READINGS. (F. YORK, Lancaster Road, Notting Hill.)

MR. YORK must be regarded as the good genius of all the school children who are fortunate enough to be treated periodically to lantern exhibitions. Every season is inau-

gured with a new catalogue of slides, containing extensive and interesting accessions to his already enormous stock of slides; and also fresh series of Readings to give interest to sets of slides, and save the exhibitor the sometimes trying task of preparing a series of brief lectures which shall be instructive, appropriate, and interesting. Foremost among the new Readings just issued, with new and suitable slides, we find the Zulu War and Zululand are treated. The place and the people, and their habits and manners in peace and in war, are fully treated, and made interesting. Bible manners and customs is the subject of another excellent series of slides and Readings. There are varied Readings especially intended for the young, at once instructive and entertaining. The subjects are admirably selected, and the treatment in the Readings possesses a degree of freshness and interest which must make them a great boon to the exhibitor, as well as to the audiences for whom they are intended.

THE MAGAZINE OF ART, Illustrated. (London: CASSELL, PETER, AND GALPIN.)

DURING the last quarter of a century many magazines of Art have been launched to float aimlessly on the waters, and finally sunk to be forgotten. As a rule, they have possessed no character or material of a kind to interest artists, and very little to attract the educated public. In many cases they have seemed, in fact, chiefly to be intended as vehicles to use up the old plates and blocks which, having done duty before, were thought good enough, when collected together, to illustrate a magazine of art. The magazine issued from the well-known publishing house in Belle Sauvage Yard has now existed upwards of a twelvemonth, and promises to deserve and secure a better fate than its predecessors. It is well illustrated, and possesses some readable papers. A portrait of Briton Riviere, A.R.A., and copies of some of his pictures which have appeared in the Academy, will interest many. Sketches of pictures and painters of the year are interesting. A readable paper on Sketching in the Umbrian Valleys, by Stephen Thompson, is very good. There are other capital papers and illustrations, all possessing some human interest, altogether different to the fossil-like character common to the majority of art magazines which have found already a well-merited oblivion.

FRENCH CORRESPONDENCE.

VAN MONCKHOVEN'S STUDIO PHOTOMETER—MANUFACTURE ON A LARGE SCALE OF GELATINO-BROMIDE DRY PLATES—HIGHLY SENSITIVE FILMS AND RAPIDLY-MOVING SHUTTERS FOR THE OBJECTIVE—ALLEGED INFERIORITY OF FRANCE IN PHOTOGRAPHY—THE PAPHYROGRAPH—PUBLICATION & A PRACTICAL GUIDE TO PHOTOTYPE BY THE AUTHOR.

THE summary which I have (perhaps rashly) placed at the head of this letter is a sufficiently extensive one. It will require considerable effort to be concise in order to include within the necessarily limited space at my disposal a notice of all the subjects hinted at in this summary.

A New Photometer for the Laboratory.—My friend, Dr. Van Monckhoven, always active in the cause of photographic improvements, has just sent me the description of a new instrument which can be used as a thermo-photometer. Its principle of construction is based on the action of the solar rays on uranic oxalate, converting it into the uranic salt with the disengagement of a certain quantity of gas; the latter is accumulated in the upper part of a flask containing a solution of uranic oxalate in water. In the neck of the flask is fitted an india-rubber cork, pierced by a capillary glass tube, the lower end of which is cut off flush with the under surface of the cork. The gas accumulating in the upper part of the flask produces a pressure on the solution of uranic, so that the latter rises more or

or less in the capillary tube, according as the amount of gas disengaged is greater or less, and the production of the gas is found to be proportional to the action of the light. By means of a scale engraved on or affixed to the tube the intensity of the luminous rays can be measured. As the *Bulletin de l'Association Belge de Photographie* will contain a more complete and detailed description of the invention of my ingenious friend, I shall confine myself on the present occasion to some remarks on the use of such an instrument, which will, I think, meet a great want. Every photographic studio ought to possess a light measurer, if I may so express myself, or, to use a better word, a photometer, for it is the light which is the primordiate agent in all photographic operations. The instrument invented by Dr. Van Monckhoven will, when it is perfected, answer this purpose, since it is no less a thermometer than a photometer—for the action of heat, independent of that of light, will cause dilatation on the fluid in the flask, and hence increase the size of the liquid column in the capillary tube—a correction will be found necessary, so as to establish the action of the light alone independent of that of heat. On the other hand, as there is gas given off, there must evidently be a decomposition of the uranic compound, and it is, therefore, important to know what is the cause of this decomposition, and how long without renewing it takes for a standard solution of the uranic salt to be converted into one of the lower oxide. Hence the graduation ought, as it appears to me, to be so arranged—and it can scarcely be a difficult matter—that every degree shall correspond to a certain established unit of the action of light, for instance, to the action of direct sunlight on the instrument in one second of time. I shall endeavour to follow the path indicated by Van Monckhoven, on the one hand, in repeating his experiment; and on the other hand, in effecting improvements in the instrument of the kind I have pointed out, adhering, however, closely to the principle which he has adopted for its construction. The idea is certainly an excellent one: it is only requisite to apply it in the best way in order to obtain an application at once serviceable and practical.

Manufacture of Gelatino-bromide Dry Plates.—The production and sale of these plates has received a much more complete development in England than in France, although in the latter country great efforts are being made to meet the necessities of this new photographic industry. The success obtained in this direction by Messrs. Kennett, Swan, Fry, and others, is both a proof of the excellence of the process, and a promise of continually increasing extension. With us, M. Stebbing has also obtained very good results, and he is constantly engaged in improving his appliances so as to render his production of these plates as rapid and regular as possible. He has just set up a gas-engine, by Bisschop, in his workshop, by aid of which the gelatine can be kept in continual agitation while there is added, drop by drop, the solution of silver nitrate which is to form the bromide maintained in the liquid in a state of suspension. By means of the same engine a current of air is established for ventilating the closet when the pellicle is put to dry. Notwithstanding the opinion of a certain number of photographers, who believe that the use of these new films can only become general when every one knows how and is able to prepare them themselves, I do not think that we shall ever reach perfection in the process until the preparation of the emulsion and of the plates becomes the special business of manufacturing houses who can carry it out on a large scale by means of the necessary appliances and machines; only by thus making the manufacture a speciality can be insured a perfect regularity and identity of production. What has been done in England is a proof of the truth of my assertion. For example, was not the collodion of Mawson and Swan highly appreciated, notwithstanding that—or, to speak more correctly, because—it was manufactured on a large scale and delivered ready for use? In a still

higher degree will this be the case with gelatino-bromide pellicle. Success is and will be the result of a manufacture which is thoroughly specialised, which is constantly being improved by methods rendered more and more perfect by practice, and on a continually increasing scale.

Rapidly Moving Objective Shutters Necessary with Highly-Sensitive Films.—Visiting M. Stebbing the other day, I was struck with a negative taken on gelatino-bromide, and representing a scene of persons and animals in motion. Among the latter was the figure of a horse with only three legs—the fourth was nowhere to be seen. This is what appears to have taken place. The time of exposure was about a second—merely open! shut! During this period the horse raised and brought down again one of his hind legs, and as this leg was in motion during the whole of the exposure, not one of its points had been kept in the same position long enough to produce an impression on the sensitive film. Thus, as will be at once comprehended, the picture, when developed, contained a tripodal horse. This appeared to me to be a very remarkable effect; the fact certainly points to the necessity of furnishing the objective with shutters moving much more quickly than those worked by hand when plates of such extreme sensitiveness are employed. Guessing the time correctly when the exposure is a long one is not of importance—for example, when it extends over thirty seconds, there is not much harm done if it be cut short to twenty-nine, or extended to thirty-one seconds—but the inaccuracy may become injurious when the exposure is itself almost infinitesimal. A shutter, therefore, by which such minute differences of time can be made appreciable becomes a necessity, for there are many cases where an exposure of only one-tenth of a second is required, while in others three-tenths or even five-tenths may not be too long.* Without some apparatus of this kind, which, as it seems to me, would not be difficult to arrange with sufficient accuracy, we shall be liable to grievous failures when plates are employed of the extreme rapidity which is now so common. To obtain improvements of this kind, so beneficial to the art of photography, all the resources of science must be taken advantage of.

Alleged Inferiority of France in Photography.—This is a question which I have no wish to enter on fundamentally, for fear of being carried beyond the limits of the space assigned to me; but I may be allowed to use the liberty accorded to me by the Editor of the PHOTOGRAPHIC NEWS, in whose columns contributors are allowed to express conflicting views with complete impartiality, merely to state that I do not share the opinion of my respected colleague, M. Versnaeyen, as regards the position which this country occupies in the van of photographic progress. This opinion he expounded at some length in his correspondence published in the PHOTOGRAPHIC NEWS of the 22nd of August last. When he wrote this letter he was no doubt actuated by the wish to see France shining among other nations who are most advanced in the onward march of our art; there is equally no doubt that his statements and arguments were based on sincere conviction. But in regarding things among us in so unfavourable a light, he was not the less under the influence of an illusion. At first I had hardly considered it necessary to express here an opinion in the contrary sense, equally well founded though it be, and if I do so now, it is only because scandal, with its hundred tongues, seemed to give point to this charge of inferiority. Is it not notorious that this correspondence of the PHOTOGRAPHIC NEWS has been reproduced in the *Photographisches Wochenblatt* of Berlin? For me, science and art have no frontiers; as far as the subject of applying the human intellect is concerned, I am under the influence of completely cosmopolitan ideas; I hold that the fatherland of the mind of man is the whole world—that for it there is no

distinction of nationality. If, then, I hold an opinion opposed to that of my colleague, it is not that I am under the influence of patriotism, though such a sentiment would be quite in its place, but that I bow to the actuality of facts. The truth is that everywhere efforts are made in the cause of progress, and that each nation has its own position of superiority and its distinguished men, though they may be more numerous in one country than in another. England, for example, so far as its position on the path of progress is concerned, is in a very remarkable position, and I would not dare to put her, marching as she does at the head of our art, on a footing of equality with other countries who merely walk in her footsteps. Indisputably, the art of photography is there more diffused than anywhere else; but though I admit it, I cannot refrain from pointing out that among us in France there is plenty of emulation. We produce much work, and do not allow ourselves to be kept back further than the requirements of prudence would dictate by the difficulties attendant on new opinions; we hold in the photographic world a position sufficiently assured not to allow ourselves to be troubled by the words, "inferiority of France." Suppose a comparison is instituted between us and any other nation; suppose even that it be proved that in some point or other we are behind the rest; we have a complete compensation, for there are many points in which we thoroughly hold our own. Let me further only beg my esteemed colleague to ask himself whether he has not placed us too low down on the photographic ladder. My own conviction is that we deserve a better position than he has assigned to us; the esteem in which all French work is held by the people of other countries, and the consideration which is everywhere accorded by the photographic press to the productions of the countrymen of Niepce, Daguerre, and Poitevin, make the case still stronger in our favour.

The Papyrograph.—When examining the working of the papyrograph (an invention of Messrs. Luccato and Woolf, brought out, I believe, first in England), it seemed to me quite possible to apply the principle on which it is based to photographic printing. Considered from this point of view, the process appears to me to be quite different, both in a practical and industrial sense, from that of the chromograph, of which I have given a description in previous correspondence. In the papyrograph, a manuscript or drawing is made with a particular kind of ink on a piece of paper coated with some substance which the ink is capable of dissolving. The paper becomes permeable in those places where the coating (which I believe to be gum-lac) has been removed, and when applied to a velvet cloth impregnated with aniline violet, it imbibes sufficient of that substance to allow of the drawing or writing being transferred, by pressure only, to a piece of white paper; in this way about 500 copies can be drawn in succession from the original. Now this idea is a very good one, and could be easily, I think, applied to photography. All that would be required would be to transfer to the permeable paper a carbon negative, which, previously hardened with alum—or, better still, coagulated—would constitute an impervious reserve. The ink would only pass through the white parts of the paper, or through those more or less white; and thus a photographic copy would be reproduced, not only of the lines, but also of the shading. The practical application of this method appears to me to promise very well. I mean to try it, and will communicate the result to my kind and indulgent readers.

The Author's Hand-book of Phototypie.—Only a line to state that my new work has just been published by Gauthier-Villars. It does not become me to say anything concerning it further than to assure my readers that I have done my best to render it as complete as possible. I intend shortly to send a copy to all the photographic journals, as well as to all the leaders of the profession, and I venture to express in advance my gratitude both for their remarks and their criticism. LEON VIDAL.

* Mr. Swan's quick-acting electric lens shutter, described in the PHOTOGRAPHIC NEWS of the 15th of August, appears to realise these desiderata.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER IV.

THE FAROE ISLANDERS—ICELAND—HOWIE MAKES A SPEECH.

ON the third morning of our voyage we sighted the Farøe Islands—groups of sterile rock, frowning precipices at whose base the water broke with a roar like thunder, and on the top of which grazed a few shaggy-looking sheep—deep, dark fissures in the face of the inhospitable coast, into which the waves rolled and disappeared in a twilight of a spray—such is the general aspect of these gloomy and forlorn islands. Yet on those bleak, desolate rocks, two hundred miles from the nearest land, in the open of the wild Atlantic, lives a race of hardy, fearless men and women numbering upwards of eight thousand. Is it not true that one half the world knows not how the other half lives, and have we not reason to be thankful that we live in a land that can appreciate Board schools and photographers? Yes, these Farøe Islanders are far behind in civilization! They have not a single ale-house, nor the shadow of a shebeen, nor a druggist's shop, not even a grocery store! Every man there is his own shoemaker and his own tailor, unless he can prevail upon his female relations to do it for him, the result to his personal appearance being picturesque in the extreme. Ah! you grumblers, how would you like to live there? How would you like to feel in the morning when you awakened that your breakfast was still swimming in the sea, that your dinner was still on the wing, and know that if you did not look pretty smart you would have to go without either? Yet these islanders have something solid in the way of consolation to reflect upon as they crack their knuckles over their sea-drift fires—viz., they have neither rögde-money nor poor-rates to pay.

We unpacked our traps and went ashore for the purpose of photographing a group or two of the inhabitants. After an hour's hard hunting in such huts as we could find, and cheyving two or three young women who evidently looked upon us as pirates or something worse, we gathered three women and four men together. The men were sullen—sulky; the women were timid and frightened. We could not make them understand what we wanted. They had never heard of such things as photographs, and of course eyed our preparations with uneasiness. One old woman wept bitterly all the time, and got worse when Howie requested her to cheer up and look pleasant. "I do believe," quoth Tom, "that the old witch fancies we are about to send her to glory."

The boat's crew that landed us had strolled up to view our work, and, like seamen, were very free in their remarks, and I do believe their appearance helped greatly to unsettle the poor beggars we were about to photograph. Howie and I were busy with our dark tent (which, by-the-bye, was like everything else that Gilbey took with him, of immense proportions; however, it came in very handy latterly, when we were glad of its shelter o' nights), and Gilbey was busy setting up his tripod. The islanders watched him carefully. He next examined his camera and screwed it on the tripod: the islanders moved nervously. He then adjusted the lens: the islanders whispered each other. He then dabbed his head underneath the focussing cloth: the islanders, with one unanimous feeling, turned and fled, and in their haste upset the old woman, who screamed and pawed the air, as she lay on her back, in an awful manner.

"Heavens!" exclaimed Gilbey, who had been trying in vain to find their image on the ground glass, "where are they?"

"Gone to get the air, Mister," grinned one of the seamen.

"They have got some very pressing business on the other side of the island," quoth another.

"Shall we fetch them back?" asked a wicked-looking young fellow.

"Yes—yes—by all means," replied the puzzled Gilbey. "Call them back, by all means! What an extraordinary people!"

No sooner did Mr. Gilbey give his consent, than the sailors gave a British cheer that made the seamens flutter out of their rocky nests and scream with fright, and dashed off in pursuit of the natives. Meantime Howie had restored the old woman to her equilibrium, and, as we had a plate ready, we photographed her in front of a mud hut, "like Niobe, all tears."

After we had accomplished this, we climbed up a hill to look for our sailors and our sitters. Heavens! Did not Gilbey turn pale at the sight that met us when we looked over that hill? There were our sailors engaged in a stone fight with about forty Islanders. Yes, ye gods! and our sailors were retreating.

We rushed down the hill, and, as Tom Howie afterwards remarked, "we packed up our traps with the utmost expedition, and fled with the greatest bravery to the boat."

We were barely seated when the sailors rushed down the rocks in a body, pushed off the boat, and we left the Island of Stromsøe while the air seemed to rain profanity and stones.

After we were clear of the surf, and without reach of the stones, Gilbey crawled out below one of the thwarts, and asked, "But how on earth did it all happen?"

The sailors looked at one another, and were silent. At last one old fellow, who was busy trying to stop the bleeding of his nose, growled, "Well, I never; and after him a-telling us to do it, too!"

"What! I tell you to do it!" cried Gilbey.

"Didn't you tell us to fetch them back?" demanded the sailor indignantly.

"Yes—but—"

"Well, they wouldn't come," grinned the tar.

Poor Gilbey had a sorry time of it when we got on board. The story spread like wildfire, with all manner of additions and variations. The whole ship, from the cabin boy to the captain, knew it; the noble company called Gilbey into lunch, and enjoyed it immensely; indeed, had we got successful pictures of those miserable Islanders, it would not have bestowed half the satisfaction on the company as what the final disaster had. It was a merry night, that! The whole ship seemed to be possessed with the spirit of laughter. You could hear the cabin boy and steward's boy giggling, as they stowed away the crockery; the cooks splitting their sides; the captain and company haw-hawing, by Jove! while forward the sailors were roaring. Ever and anon a voice would exclaim, "Heavens! Where are they?" Then an answer, "Shall I fetch them?" followed by roars of laughter. Gilbey and the man at the wheel were the only silent and sorrowful beings on board that night. Gilbey had retired to his cabin under the plea of illness, and Howie seized the occasion to deliver his opinion relative to fat pork, and had a boot thrown at his head for his pains.

Out in the open once more! Three hundred miles of the rolling North Sea had we to cross before we could see land again: we would then be within the Arctic circle. We had beautiful weather; rather cold, but clear and sunshiny. We passed our time sitting on deck, smoking our pipes, watching shoals of puffy (blower) whales sporting on the rolling waves, and listening to the irrepressible Howie.

The voyage was only one thousand miles altogether, and I daresay some of my readers may sneeringly be remarking that I am making too much of it. I do not think I am. Independent of it being my first voyage, I was going to a country unlike any other under the sun. I went to a country where grain cannot grow—where there are no forests—where the trees never grow higher than a walking stick—where there are no flowers, no fruit, except a tasteless little thing of a berry no larger than a pea—a country

with no relics, no monuments of ages passed away, although it dates a thousand years—a country where you can behold Nature, without art—rude, unpolished Nature—Nature in her wildest and most fantastic moods.

In other countries you go to see wonderful architecture designed by geniuses whose names are sunk in the oblivion of time. You go and pay money to have Turkish baths; you enjoy hours upon hours in galleries representing the antiquity and wealth of the country; but here you have Nature supplying all these wants. You can obtain scenery that will rival the glens of dark Locknagar; you will find the remains of centuries' lava mushrooms. You will find wells that can boil an egg; lakes that have any kind of temperament you choose: if it prove too cool at the edge, you have only to swim where you see the steam rises, and you can get it as hot as you wish. You will find a most remarkable atmospheric phenomenon. The mountains at twenty miles' distance will appear but only three or four; and such is the magical effect of pure atmosphere that you are almost tempted to reach forth your hand and pluck the purple heath that grows on their rugged sides.

Who is it that has taken a voyage, either long or short, who has not felt the thrill of "Land ho?" You should have seen the crowding on deck, and the eager looks of our noble company, when the bleak coasts of our destination were descried. Our first landmark was the smouldering and smoking Mount Hekla; forty, fifty miles' distance we could plainly see it; then came the black, terrific coast, deeply indented by narrow inlets or fiords; bays, whose dark, unfathomable water were surrounded by cliffs under which our vessel looked but a toy.

By evening we cast anchor in the harbour of Reikiavik, the most northern of capital cities. The simplicity of this city of twelve thousand inhabitants strikes you with amazement. It may be described as two long parallel rows of streets: the houses built of wood, and only one storey high. Every house in the place is thickly coated with tar, the frames of the doors and windows being picked out with white, so that it has anything but a lively appearance; in fact, it is quite the reverse, and gives you the notion that it is in half-mourning for some distant relation. Still, in despite of the poor look of the place, there are plenty of good things to be had in it. Independent of the new hotel, that was then a two-storey building with a square roof running up to a peak, and the Governor's house—a long, low, sprawling affair built of lava—there was, or is, a very comfortable-looking church.

Here we landed and took up our abode at the hotel. In the evening we were invited to what Howie termed a "grand spread," by the Allthing the next in office to the Governor. It was the misfortune of all that we could not understand each other—there was not one there who could speak English, and we knew as much about the Danish language as the man in the moon. However, things went on swimmingly: our awful appetites helped to cover any mistakes we made with the dishes, and our strong heads resisted their drinks. At last, apparently, the feast was over, and to our astonishment the giver arose and delivered a thundering speech; having finished, another started, and so on until all had their say with the exception of us three Englishmen.

We had diligently given our applause to all the speeches, and emptied our glasses and filled them again with the boldness of Aldermen at my Lord Mayor's feast. But now there was a hitch in the performance. The Icelanders coughed, looked at each other, and then at us, in the most significant manner.

"See!" quoth Tom, nudging Gilbey, "they want you to make a speech!"

"A speech!" gasped Gilbey, in horror-struck tones. "What on earth can I make a speech about? I never made a speech in all my life, and don't know even how to begin."

"But you must make one," replied Tom coolly; "it's the least you can do, and they expect it from you."

Gilbey cast a helpless look around, and an appealing one to me; but I had never made a speech either, and felt anything but confident enough to make one now.

"You are a couple of nice fellows," quoth Tom sneeringly. "If the honour of old England reposed upon your shoulders it would soon come to grief. Give thanks that you have at least one eloquent tongue that can do justice to your fatherland."

With that Mr. Tom Howie rose with the utmost coolness, bowed smilingly to the company, commenced and gave Longfellow's poem of the "Skeleton in Armour."

"I was a Viking old;
My deeds, though manifold,
No scald in song has told,
No saga taught thee!"

The Norseman phrases in the poem evoked bursts of applause; in short, Mr. Tom had quite an ovation, and gained for himself a reputation for learning and eloquence that lasted out our stay in the country.

There are lots of reputations founded upon similar bases, and no one knows anything about it.

(To be continued.)

ART AND ITS RELATION TO PHOTOGRAPHY.

A SERIES OF PAPERS.

No. II.

BY AN ART STUDENT.

THE first necessary and primary element in portraiture is grace of outline, which comprises not only the external limits of any subject, but everything contained therein, for lights and shadows must be adjusted with as great attention to their form as is bestowed upon the figure itself. And as herein lies the great source of successful art production—as without a knowledge of what constitutes the beautiful in outline all work must necessarily sink beneath the level of mediocracy—it will be as well to consider, as far as possible on paper, what outline proper consists of.

Before proceeding to discuss this, however, I would draw attention upon one point which is of the utmost importance, viz., that anything, no matter what it be, that is produced without study or effort, can never hope to rank for excellence. It is an utter impossibility that the result can be valuable. Therefore, if photographers labour under the belief (as they seem to do) that works of art are to be produced without much mental effort, as long as they continue to hold that opinion, so long then will their work remain as it is almost universally (at present), unable to compete with artists who have given and are giving the subject a life-long study.

The use of colour has been the great cry among photographers, and, to a certain extent, they are justified in making it an excuse, for colour, which is denied them, is undoubtedly a wonderful aid to popularity, covering many blemishes, and lending a charm to what might otherwise be unnoticeable and without interest. But the want of colour is no excuse for the want of art. We can allow the absence of the one, but not the other. Like education, there is no substitute for it. A man may be an honest man dressed like his fellows, and although uneducated, will, by his appearance, pass in his own circle; but the moment he associates with those above him in a mental sense he sinks at once to the level of the vulgar; and thus, with the majority of the photographs of to-day, they lack all which goes to make an educated production, and though, perhaps, pleasing the million, do anything but give satisfaction to those best competent to judge. Comparisons are invidious, and therefore it is not to be

supposed that this sweeping statement applies universally, as there are many photographers, happily, who are striving to make their work worthy of them, for mention could be made of many such. Yet these papers are written in the hope that those who aim at high art, who love it for itself alone, unconnected with sordid gain, may reap some benefit. Whoever practises the profession of photography with the main object of turning out as much work as possible, and pandering to the taste of the general multitude, need never hope to raise his art above its present level. The present prices are perhaps a drawback; but give us the glorious pictures teeming with mind, pictures that the eye can feast upon again and again, and if patrons are not found ready to purchase at a price which will compensate for labour, then the love for art and the beautiful will have passed away. When the painter places the virgin canvas before him on the easel, and, charcoal in hand, prepares to commence the picture, he has some definite object in view. The model has been placed in the position considered most suitable; the light has been carefully thrown, and the drapery, as well as the principal parts, most cautiously posed. There is a general outline, a completeness in the action, or repose of the model, which denotes something. The model is there representing something which has for its birth the brain of the artist. The figure or face has many unsightly parts which cannot be subdued by the shadows thrown. But the artist heeds them not; his imagination is busy; in his mind's eye he sees the scene he is portraying; every beautiful line of the figure is followed; every delicate curve of the rounded arm or cheek is sized and noted down; and when these are justly rendered, and brought out by all the means in his power, the ungainly parts are sunk and softened till we see them not. The draperies are made to throw up the salient points of the figure. The background also helps to tell the tale, and when all is finished, and the artist, though unsatisfied, can do no more, the eye rests upon the principal parts, and catches at a glance the intention he has attempted to depict. No twist of the arm, no thrusting forth of any minor part, tends to carry away the mind from dwelling upon what was meant to be the principal part of the picture. The was a photographic exhibition—I do not remember where—but there was one thing in connection with it which made a profound impression upon me at the time, and as it has a bearing upon the case in hand, I will mention it. A medal was awarded by the judges to a picture—a portrait it was—on the grounds that the drapery of the figure had been most excellently rendered. The notion struck me as being remarkably fine. I certainly never heard of the Royal Academy granting a medal for the able manner in which a coat or lady's dress had been imitated. As there were some artists amongst the judges, I am inclined to think it must have been a little piece of satire on their part. Nothing could illustrate my meaning better: the main feature in the portrait (the face, as it ought to be) passed over, and the drapery—the subordinate part—raised to the first rank. Let us have the face equally well rendered, and the dress can then be allowed, but not till then. Conquer the main difficulty. But he who commences by allowing paltry things to usurp the main feature of his picture is no artist. By years of patient study the threads in a linen cloth can be imitated one by one; but not so with the divinest of God's creations—the human form. And he who wastes the precious time dallying with the one, and neglecting the other, can never hope to be recognized as a legitimate student of the fine arts.

In my next I will endeavour to show what ought to constitute a good photographic picture. The papers were originally commenced in this journal four months ago; but, owing to indisposition, have been delayed.

Correspondence.

POWDER PROCESS.

SIR,—Will any worker of this beautiful and permanent process give their experience in dissolving away the yellow bichromate after development?

I find a great difficulty in retaining the fine half-tones, they washing partly or completely away, leaving a hard, chalky image. In the old vitreous process of Lafon de Carmasac I found no difficulty, the collodion film firmly holding the pigment.

A CANNY SCOTT.

LUXOGRAPH PICTURES AT FALMOUTH.

SIR,—In reply to a letter in last week's issue by a "Non-Exhibitor," it is much to be regretted that a principle cannot be discussed without introducing individual names. I am not surprised at his taking a "nom-de-plume," as his statement is a breach of confidence. How does he know that the plate was prepared by the firm he mentions, or the enlargement done by a company?

Granting that his statement is correct, I consider I am in the same position as a firm (I shall mention no names) who take a medal for their operator's work. The company who do the enlargement are for the time being in my employ, the same as a first-class operator may be to a firm of photographers. Mr. "Non-Exhibitor" must be behind the times if he does not know that my case is not an isolated one, as the "Society of Great Britain" awarded last year a medal to a similar case.—Yours, &c., H. GARRETT COCKING.

Talk in the Studio.

ORNAMENTAL BORDERS.—We have received from Messrs. D. H. Cussons and Co. an example of gelatine negatives of ornamental designs for borders, making a card portrait into a cabinet by surrounding it by a well-designed border. Judging from the sample, these are very excellent, artistic in design, and perfect as negatives, with masked centre for printing borders. They are produced in Paris. We can with pleasure commend them to the attention of photographers.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The first meeting of this Society after the recess will take place on Thursday next, October 2nd, at 8 p.m., in the rooms of the Society of Arts, Adelphi. Papers will be read by Messrs. Cobb and Brittlebank.

RAPID PHOTOGRAPHING.—Mr. Muybridge's method of photographing horses in rapid motion has lately been applied in San Francisco to the study of human action, particularly that of athletes while performing their various feats. In order to display as completely as possible the movements of the actors' muscles, they wore brief trunks only while performing, and thus all the intricate movements of boxing, wrestling, fencing, jumping, and tumbling were instantaneously and exactly pictured. The first experiment was in photographing an athlete while turning a back somersault. He stood in front of the camera motionless, and at a signal sprang in the air, turned backward, and in a second was again in his original position, and in his very tracks. Short as was the time consumed in making the turn, fourteen negatives were clearly taken, showing him in as many different positions. The same man was also taken while making a running high jump. The jumping gauge was placed at the four foot notch, in order to give an easy jump, as in making it fourteen stout hempen strings had to be broken, as in photographing trotting horses. From the camera to a point beyond the line on which the jump was made a number of strings were stretched. The two base lines were only a few inches above the ground, and from them to the apex the strings were placed an equal distance apart. In jumping, seven of the strings were broken in ascending and seven in descending. The strings were tautly drawn, and so connected with the camera that as each one parted a negative was produced. Other pictures were taken of men raising heavy dumb bells, and the various movements of boxing, fencing, and the like.—*Scientific American.*

PRINTING ON GLASS.—The following method of printing on

glass may possibly be of service in many ways instead of the one of etching or grinding, now so frequently resorted to. The process, patented in Germany by Mr. V. Koeppe, consists, first, in obtaining a positive plate consisting of plaster of Paris, type-metal, cement, kaolin, &c., from a wood-cut or electrotypes. From the positive plate thus formed a negative is obtained, the preparation of which is as follows: 50 parts of good glue are soaked in 40 parts of water, 50 parts of glycerine are then added, and the mixture is exposed to gentle heat until the glue is dissolved. One part of olive oil is next added, the mixture is again heated to a boiling point, and now a cast may be taken of the positive plate. On cooling, the shape is retained, but it remains very flexible. It may now be attached to wooden plates or rollers, and is then ready for printing. By encasing the slender stem of the cast in a metal sheath, casts of single letters may be used as in the case of ordinary type. The colours are applied to the plates by means of rollers. The printing inks are composed of the desired shade of pigment, levigated with enough balsam of copaiba to form a paste of the consistence of butter, and to this Venice turpentine and 50 per cent. of semi-resinified oil of turpentine or lavender are added. Bronze powder may be applied immediately after printing, and the piece is then to be baked in an oven.—*Gewerbe Zeitung*.

MORE JOY FOR TOURISTS.—Outside a photographer's shop in Princes Street, Edinburgh, hangs the following announcement—"Highland costumes kept for gentlemen to be photographed in, and Newhaven fishwives' costumes for ladies."—*Family Herald*.

To Correspondents.

GRISNEZ.—No detailed description of the electric shutter has been published. The inventor is Mr. Cowan, 36, Porchester Terrace, London, W.

ONE WHO WISHES TO KNOW.—The earliest *carte-de-visite*—that is, the earliest portrait of that size—we have seen, was produced by Dr. Diamond in 1852. The earliest who gave the name and created the rage for the *carte* was Mons. Disderi, in Paris, in about the year 1859. During the following year they began to be the rage in this country.

S. COWELL.—The exhibition of the Photographic Society will open to the public on Monday, the 3rd of November, and to members, the Saturday evening previous. Friday, the 26th, is the last day for receiving pictures. All particulars may be had of Mr. E. Cocking, Assistant Secretary, 57, Queen's Road, Peckham.

G. L. F.—A collodion positive does not fade; but if it be exposed to the air without the protection of glass, it will tarnish and spoil. If it be well varnished this will not occur, but in any case it should be kept under glass the same as a Daguerreotype. There are many reasons why paper prints superseded glass positives. One important one is the possibility of rapidly multiplying copies. The fragility of glass was also an objection.

R. D. M.—We are sorry, but can scarcely help you. We cannot, with propriety, fill a large amount of space by reprinting, for the benefit of an individual, an old article which his carelessness allowed to be destroyed or lost in a back number. Most of the early YEAR-BOOKS are out of print. They can sometimes be obtained at an advanced price by advertising for them.

F. R. A.—You should be more explicit. Do you wish to take enlarged photographs of microscopic objects, or microscopic copies of large objects? In either case, you had better read some of the many articles which have appeared in the NEWS and YEAR-BOOKS on the subject. There is a brief, simple, and useful article on p. 56 of our YEAR-BOOK for 1866.

STAINER.—Mr. Woodbury is the proper person to apply to. Shall we forward him your letter?

GRISNEZ.—We do not know who supplies collodio-chloride material at the present time. Mawson and Swan used to do so, perhaps do still. 2. The article on clouds to which you refer appeared in the NEWS of August 31st, 1877. It is in print, and may be had by applying to the publisher.

COLLODIO-BROMIDE.—Many thanks. In our next. Too late for this week.

NORMAN MAY.—We cannot understand the omission, which shall at once be rectified.

J. M.—You may obtain acetone of a manufacturing chemist: possibly of Hopkin and Williams. It may be obtained in various ways: one is by distilling dried acetate of lead in a glass retort, at a red heat, with plenty of water supplied to the condenser; the acetone collects in the receiver. 2. The earliest numbers of the YEAR-BOOKS are out of print.

BusY.—You will not find any enlarging process on paper very rapid. If you had stated what method you were using we should have been better able to tell you if there were a more rapid process. A process published some years ago by Herr Sternberg is said to be very rapid. It is as follows:—The paper is prepared as follows:—

Rainwater	...	...	...	35 ounces
Tapioca	...	...	...	310 grains
Iodide of potassium	...	...	...	155 "
Chloride of potassium	...	...	...	620 "
Lemon juice	...	...	...	250 drops

The tapioca is first made into a paste with a small quantity of cold water, and the other materials are then added gradually, having been previously dissolved in the 35 ounces of rainwater, which has been made to boil. When cool, it is spread on the paper by means of two pieces of sponge, as in the preparation of arrowroot paper. If exposed to the atmosphere, this paper very quickly assumes a reddish hue, and marbled stains often show themselves on the surface; but these defects disappear when the sheets are sensitized. The silver bath is composed of—

Rainwater	...	...	...	35 ounces
Nitrate of silver	...	...	...	2 to 3 "
Citric acid	...	...	...	80 grains

The strength of this bath should be reduced if the negative be dense, and increased if the negative be soft. The exposure must be prolonged until the outlines of the picture appear on the sensitive paper. It is then developed in a solution composed as follows:—

Rainwater	...	...	...	4 ounces
Saturated solution of gallic acid	...	...	...	1 ounce

Immersed in this bath, the proof will then become gradually stronger, and will assume a sombre brown tone. It should be raised from time to time by the corners and examined. When it has attained sufficient strength, it must be taken from the bath, and made to float on the water bath, to prevent the gallic acid from sinking into the paper. After some minutes the sheets should be plunged into the water and well washed; it is then toned in an old gold bath; and, finally, it is fixed in the ordinary manner. After the mounting, the proofs may be treated with eucanaistic paste, or varnished if brilliancy is required. The following process is somewhat less rapid, but gives fine results. It is described by Mr. Waterhouse as employed in the Belgian War Office for direct printing. Thin Stienbach Saxo paper is salted by floating it for one minute on a solution composed of—

Chloride of ammonium	...	...	...	2 parts
Citrate of soda	...	...	...	2 "
Water	...	...	...	100 "

Sufficient citric acid should be added to make the solution just acid. The paper is then dried, and may be kept for use. To sensitise it, float for three minutes on a bath containing four or five per cent. of nitrate of silver rendered acid with citric acid. This operation and the drying must be performed in a perfectly non-actinic light, as the paper is very sensitive. The exposure under the negative varies from a few seconds to one or two minutes, according to circumstances. Develop as follows. Prepare stock solutions of—

A.—Acetate of lead	...	...	...	1 part
Water	...	...	...	100 parts
B.—Gallic acid	...	...	...	1 part
Alcohol	...	...	...	8 parts

To 4,000 parts of water 50 parts of solution A and 8 parts of solution B are added (if the weather is warm, or the prints have been over-exposed, a little acetic acid may be added with advantage), and the mixture is filtered into a largish dish. The prints are immersed one by one, and constantly moved about, to ensure the even action of the solution. The detail gradually strengthens, and, after about a quarter of an hour, appears of a good black colour. They are then removed to a bath of hyposulphite of soda at 30 per cent., and remain in it with constant movement for ten minutes or a quarter of an hour, and are then well washed with several changes of water. No toning is necessary, but if required, the prints can be toned in the ordinary way. We have seen good results by the magnesium light with the following:—The paper was salted by floating on a solution containing 15 grains of iodide of potassium and 5 grains of bromide of ammonium in an ounce of water. The silver bath contained 60 grains of nitrate of silver and 10 minims of acetic acid to each ounce of water, and the paper was used immediately after floating on this bath, and whilst it was still wet. The amount of enlargement was about six diameters; that is, the head, in the negative of which the head and bust were produced, was about half an inch long, and was enlarged to about three inches long. The exposure was exactly thirty-five seconds, with the light from one piece of ribbon. No trace of the picture was necessary in the process; but on applying a hot solution of gallic acid the image rapidly appeared, and, after about three minutes' development, was fully out, at once soft, round, and vigorous, clean in the lights, and deep in the blacks, and an exceedingly good enlargement was produced. With a hot developer the exposure is shortened, but the risk of fog and stains increased.

The Photographic News, October 3, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY IN AFRICAN EXPLORATION—COSTUME PORTRAITS—STUDY OF MOTION BY MEANS OF THE CAMERA.

Photography in African Exploration.—Photography is usefully employed by modern explorers. Major Pinto, the Portuguese officer, who has recently returned from an important tour through Africa, availed himself to a great extent of the camera to depict the scenes he passed through, and his photographs will naturally afford a valuable means of illustrating the volume he proposes to issue almost immediately. The first African traveller, we believe, who made use of the camera was Herr Gerhardt Rohlf, upon whose staff Herr Remele, a Berlin photographer of note, found a place. Our readers may remember an account, which we published in these columns, of Herr Remele's photographic experiences in Africa, which were exceedingly interesting, besides dealing with points of practical detail that would be invaluable to future travellers. Herr Remele travelled right across the Libyan Desert with his photographic equipment, for days and days over sandy plains, which were varied at times by smooth, molehill-shaped sand ranges, the travelling being as monotonous as it was fatiguing. Two points in his account we remember well: the difficulty of excluding sand from the plate-boxes and carriers, and the scarcity of good water. As to supplies of the latter, they were obtained from some sheik or important man of the village, who in one case filled the water bags with brackish water, a fraud that was never discovered until the caravan had gone a couple of days on its journey, so that its immediate return became imperative. The sand difficulty is one experienced by every African traveller; and at the time of the Abyssinian expedition our military photographers were powerless to prevent the fine particles from penetrating their apparatus. Mr. H. M. Stanley, who has once more started to explore the Congo district, has carried with him on the present occasion, we hear, a very complete set of photographic apparatus, and the wherewithal to practise the wet process. He has, as before, a boat ready to fit together for navigating the inland lakes, and has engaged a large party of natives to act as retinue. He has, however, preferred to change his name for the nonce, and this bit of mystery has already been the cause of his delay by officials on the coast. We do not know if any of the officers who have followed Cetewayo into his hiding places have been provided with a camera, but we may be sure that Pietermaritzburg, which possesses several capable photographers, will speedily send us home pictures of the vast tract of Zululand which is henceforth to be considered under British jurisdiction. Natal is one of the most picturesque mountainous districts known to travellers, and from all accounts scenery in Zululand is still more grand in respect to its gigantic cliffs and forest grown ravines.

Costume Portraits.—An odd announcement by an Edinburgh photographer, which has been copied into a good many journals, to the effect that "Highland costumes are kept for gentlemen to be photographed in, and Newhaven fishwives' costumes for ladies," contains a good deal of common sense, after all, for nowadays it is, so far as ladies are concerned, quite the fashion to attire oneself as a shrimp at the seaside. At any rate, it is a custom among the fair aristocrats that frequent French watering places. We hear of duchesses in striped petticoats and bare feet, the shrimping net held in jewelled fingers, who take a turn on the sands every morning, while other ladies beguile the time in crab hunting among the rocks. Everybody must have felt how delightful it must be to patter about upon sea-weed and among the little pools in the rocks at low water; and now that the pastime has become a fashionable one, we can all join in it without being ashamed to be caught at such sport. Moreover, if the occupation gives ladies

an opportunity of wearing pretty costumes, to say nothing about showing a small white foot on the yellow sands, there is yet another reason for our amateur fishwomen. The bonnie fishwife herself is something of a fraud, or at any rate an exaggeration, and it will be very nice to see picturesque costumes set off at their best. The firm of Braun, of Dornach, who do a large business in the production of costume pictures from small cartes to twenty and thirty-inch pictures, and whose Swiss series includes more than a score of different dresses, soon found out that the native element did not satisfy their wants. When you have found a pretty girl in a pretty costume in the Canton of Berne, or Lucerne, or Appenzell, the chances are that she objects to be photographed. A costume in Switzerland is a costly affair, with its lace and silver chains, and the pretty girl who wears a pretty costume, therefore, is usually a woman of mark and position in the district, and would scarcely like to have her portrait exposed everywhere. So M. Braun overcame the difficulty in a very sensible fashion. He chose half a dozen comely models, and had these fitted with the different Cantonal costumes. The latter were made with great accuracy, and for the most part on the spot, so that they might be correct in every particular, and the models, suitably dressed and with suitable backgrounds, were then all photographed in the studio at Dornach. The results of such a system could not be surpassed. M. Braun's models were either Swiss, or from the borders of the Republic—Dornach itself is but a few miles from Basle—and the costumes they wore were the most perfect that could be procured. In fact, any of our readers who are unacquainted with M. Braun's Swiss costume series will do well to glance through the magnificent pictures he has prepared. One of the series consists of twenty-inch portraits or thereabouts, and these, elegantly coloured by a staff of artists at Dornach, sell largely in Paris and other capitals. Several pounds a-piece are charged for these magnificent productions; but the same pose and costume may be purchased in carte form for half-a-franc. Our Edinburgh friend seems to be going a step further, and asks the purchaser who desires to buy a photograph of a costume to have himself photographed wearing it. There would be no difficulty in this so far as ladies are concerned, for they would seem to have no choice but to be dressed as Newhaven fishwomen; on the subject of kilts for the gentlemen, however, a difficulty, we suspect, would sometimes arise. What would a Macpherson or a MacNicholl say (by the way, we heard in Scotland lately that there was no such thing as a MacNicholl tartan) if they saw Mr. John Smith, of Camberwell, wearing a kilt of their clans? It might be a question of claymores and bloodshed, and Mr. John Smith's conscience would be never easy after he had once consented to sit or stand in a kilt. There are, however, plaids that are not claimed by clans, and as these are open tartans, as they may be called, have usually a good deal of red about them, and consequently are very striking. We recommend sitters who must be taken in Highland costume to choose one of these.

Study of Motion by Means of the Camera.—As the taking of instantaneous photographs of men and horses while undergoing certain work is attracting some attention just now, it might be well to inquire whether electric illumination would not greatly facilitate the operation under some circumstances. The trotting of a horse, or the motions of an acrobat at certain periods, are some of the problems that have been put before the photographer to solve with his camera, the instrument being opened and shut by means of strings or wires moved during the performance of man or animal. A momentary electric flash might serve the same purpose, probably. Many years ago, a revolving fly-wheel was photographed by an electric flash in this way, the exposure being so quick that in the picture the wheel seemed at rest. Where, therefore, phases of motion are under study, this means of illumination might possess advantages.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER V.

WORK IN ICELAND—JAN, HIS DOG SLOKOS, AND THE BEAR— "RELIGIONE ET BONUS MORIBUS."

HERE is my fifth paper, and I declare I have only landed my readers in Iceland! In the original design of these sketches I had by this time landed you all safe in old England again, and was about to introduce you to new characters and new scenes, but now I find that my "Lookings Back" cannot be treated in such a manner; in short, they must have their time. Fain would I know what my readers' opinions are concerning them, and I tremble while I breathe the wish? Fain would I keep you all a little longer in that fascinating land in the Arctics! I should like to tell you about boiling wild-geese eggs in the pools of the Great Geyser: to describe the wilderness of sterile rock by which they are surrounded, the strange unearthly subterranean rumblings that precede the weekly discharge of boiling water from those wonderful wells! I should like to take you to the north coast, where the Greenland winds, laden with icy perfumes gleaned from its continent of glaciers, might sweep round you, pinch your ears, and paint your nose a deep but undesirable blue. I should like you to gaze with me at the two wandering icebergs that have grounded on the rugged coast—to photograph with us those glittering castellated forms—to climb them—to share our terror when we discovered a bear, a real live polar bear, "fresh from his native woods," as Howie declared, ensconced in a deep chasm on the largest berg.

Yes, my friends; I am determined you shall stay a little longer with me in the land of ice!

For the first few weeks we had very unsettled weather, and had to work hard under the most distressing circumstances: sometimes being drenched to the skin by a sudden deluge of iced water; it did not come gradually or in drops as in other Christian countries, but at once without warning, and in sheets sousing you in a most effective manner. We had oil-skins and furs, but we would have wanted chain-armour at times; for after the rain would come a wind that would pierce anything softer than steel: this wind was generally accompanied by small hail of the most inveterate and tormenting qualities that ever fell from the clouds. It got in your ears, in your eyes; if you did not tie the feet of your oil-skins it was half way up your legs in a minute; and if you opened your mouth to swear or reason with it, it went down your throat wholesale, like an iced drink. After it was over we would commence and swab it out of the cameras, pick it out of the lens, thaw it out of the bottles, and make haste to get a negative before it would begin again.

The noble company didn't like it! Some of the youngest and most foolish made bold attempts and joined our caravan upon several occasions; but they were led home with strong symptoms of a speedy dissolution about them. Then we had it all to ourselves, and the noble company stayed at home, feasted, played cards, and speculated which of us poor beggars would be the first to die of cold. I assure you we were objects of great and deep interest when we returned at night. Jan, our body-servant and guide, I think, divined the feeling of the noble company, and used to marshal us proudly into town wearing a look that said plainly: "Look here! Look here! Is it not wonderful? I have brought them all back alive once again!"

I must introduce you to Jan. He was chosen by the governor as being the best guide we could get. He was sober and honest, knew all the wonderful places on the Island, and, above all, could speak our language. Of the last-named accomplishment the least said the better: suffice it to say that it was a source of endless amusement to Howie, who, whenever a halt occurred in our work, took occasion to improve Jan's English. Jan was a true type of an Icelander: stunted in stature—broad-faced—blue-

eyed—good-natured and kindly in disposition. Jan was the possessor of a faithful four-footed follower—a fox-hound, common on the Island, but more so, and in a wild state, I believe, on the Island of Jan Maine, at the entrance of the Straits. This dog of Jan's was pure white, with sharp teeth and a fine scent for game. It was Slokos' beautiful scent that discovered the bear in the iceberg before alluded to. Jan was in ecstasy—he danced like a madman, and hugged his dog and wept tears of delight.

"Behold! behold!" he cried in a burst of emotion. "Fine hound—fine scent—sweet smell—him snuff up a Polar bear! Clever Slokos! Him smell—him stink up the bear! Ha! ha!"

According to Jan there never lived a dog with so wonderful a scent as Slokos. If we came upon a spring well, and Slokos ran to lap at it, Slokos had scented it from afar. If we came upon a set of wanderers, or a stray hut, Slokos' defining nose had led us to them. He scented some wonderful scenery; he scented the boiling wells; he even scented the icebergs, and it now was only a little matter to scent the bear.

We had been on the Island over a month when the incident of the bear occurred. We had got clear of the vile weather, and had been enjoying something very like a tropical warmth. We were now in the middle of an Icelandic summer, and could see the sun the whole night long if so inclined. We took some remarkable pictures between twelve and one o'clock on one occasion.

It was on a Sunday afternoon, when we had made a little journey of a retrograde movement, in order to view once more our friends the icebergs, that we discovered the bear. Our camp was about fifteen miles inland, and we had come upon our ponies—we had no less than seven of these hardy quadrupeds in our little caravan—and while Jan, Howie, and myself dismounted to have a scramble on the hergs, Mr. Gilbey chose to sit on his horse's back and view us from the shore. Now it is worthy of remark that Gilbey's horse ran away with him at the very moment that Jan was caressing his dog, and that Howie, with a frantic yell, made known the presence of the bear. I do not mean to insinuate anything; I merely mention it as a very strange occurrence, especially as at all other times that horse, being a little broken winded, showed a greater tendency to lying down than running away. But there is no accounting for freaks of the animal creation, else how did the bear come to be on a wandering berg, three hundred miles from its native shores?

Jan, after he had done weeping and kissing Slokos, unslung an old flint-lock rifle that he always carried with him, and while he ostentatiously inspected and shook some powder into the pan, he declaimed, "I will quick discharge" him. I will bake death in bruder!"

After this he crept to the edge of the chasm, and laying himself flat down, commenced snapping his piece at the bear. He snapped it ten times with no effect.

"Haden't you better put a lucifer in it, Jan?" asked Howie.

"Go 'way! You stir me up! *You spoil mein sport!*"

At length, about the twentieth trial, Jan's warlike relic went off with a roar like ordnance, and, truth to tell, the bear was no more. A poor skeleton of a bear it was—a mere frame—it had been living upon a hopeful nature for some time past, but hadn't thriven. However, Jan was loud in its praises—in his own praises—in his dog's praises. It was a great bear, and had a splendid skin; his (Jan's) heroic conduct should be reported, and the wonderful powers of Slokos' nostrils should be sung in song! Jan delivered this in broken sentences, as he dexterously skinned the unfortunate wanderer. Howie sat silently watching him on the edge of the chasm, laying the foundation of many a wonderful and thrilling tale to be told amidst his gasping friends when they sat round a candle with a long snuff on winters' nights.

On our way home we suddenly lighted upon Gilbey, sitting quietly, trying to light his pipe. "Let's make be-

lieve that the bear is after us!" cried Tom; and urging our horses to full speed we gesticulated violently, and roared with all our might, "The bear—the bear!" And, singular to tell, Gilbey's horse ran away with him for the second time that day.

A few Sundays after the above occurrences we were encamped at Bufell, a miserable village of four or five families, situate at the base of Mount Heckla. We had been working hard—sometimes with the noble company, and sometimes by ourselves. The summer was already gone; the nights were getting dark, and the aurora borealis increasing in splendour. Two months of summer! That is better than we have experienced this season, is it not? But soft! I will not wander—my space is limited. Ring the bell! Let the curtain rise to the slowest music; lights down; moon rising over the crest of the distant Heckla, and silvering the intervening lake of Thingvalla; tent and smouldering camp fire in the c.; Jan asleep on his bear skin, L; Howie and self discovered half asleep, R.

A dazzling meteor makes us start! I light my pipe, and Tom pokes up the embers, and by their flicker I observe traces of tears on his cheeks. He sees my look of surprise, and smiles as he holds forth a hand.

"Every one has two sides to his character, Geo'," he says at last; "you thought I could know no sadness; I daresay you thought me incapable of soft feeling! You thought I lived on the surface—that I was all sparkling froth! Well, I have not any deep sorrow to brood over; but when the Sunday's quiet comes upon me, then I think of other Sundays, when motherly eyes looked their deepest love on me; when a sweet voice instilled into my soul the seeds of goodness, that I sometimes think have grown so stunted! In such moments, Geo', I feel so little—so lonely—so—so queer; I cannot explain to you—but, softly in your ear—at such moments I can see my mother—see her, Geo'!—see her as plainly as I see you now, only she is radiant and white, with a halo of light round her; then—then I know intuitively that, lightly as I take life, I have not long to stay!"

I was not very much astonished at this simple, serious outburst of Tom's. Several times I had observed him silent, absorbed in thought; I had even heard him sob, but directly he saw or heard us, the gloom left his brow; his blue eyes sparkled, and his ready tongue was rattling along as lightly as ever!

Tom was silent; and I clasped his hand. I would not trust myself to speak. Remember, I was young, and a thousand miles from home. Aye! Even had I been as old as I am now, I am doubtful but what I might feel the same. I hope I should, for I would not give a crack of my thumb for a man whose heart is all worldly and hard.

"I am afraid I have given you the blues, Geo'!" quoth Tom, as I sat in thoughtful silence beside him. "Now I must bring forward the other side of my character, and brighten you up. While I was sitting here looking at the dying embers, and buried in my sad reminiscences, I was half inclined to burst out laughing: they say it is but a step, you know. The thought flashed upon me of the way in which a school was chosen for me. My father was a coachman, and had himself a very limited education. My Uncle Toby—who is alive yet—is a horse dealer, shrewd and sharp as a needle; but signs his name "X, his mark." Well, mother having died, the two brothers laid their heads together, and had a deep consultation about my future welfare. One thing they both resolved upon, and that was to give me what they had not themselves—a good education. 'What school shall we send him to, Toby?' asked my father. 'Blow'd if I knows,' was Toby's eloquent answer. 'But I'll tell 'e, Tummas, let's go round town and spect a few ou em, then we can pick the best.' So accordingly father and Uncle Toby went and visited the schools. One school was too little; another had a school-master whose manner they did not approve of; one had this fault, and another had that, until the afternoon approached, and still

they had not discovered the arena of knowledge that was good enough for their little trust. At length they came to an institution known as Dr. Canelinn's Academy. The Doctor considered himself anything but small drink, and took every opportunity to let the public know the principles he employed in carrying on his profession. Thus it was that he had printed in a wreath that spread all over his school house, in gold letters, the motto: *Religione et Bonus Moribus* ("Religion and Good Morals").

"This here seems a proper place," cried Uncle Toby, wiping his forehead. I've no doubt he was getting tired of the job by this time.

"Wot's that?" asked father, pointing to the gold letters.

"That cre's the motter," answered Toby.

"Hum! Motter! What does it say?" and father put on his specs and spelt it out the best way he could. 'Hum! hum! "Really Johnie eat bones and murphies." Hum! Is that what they calls a motter, Toby?'

"Ha! ha! ha!" roared Uncle Toby, holding his sides, 'Ha! ha! ha! "Really Johnie eat bones and murphies." Well, that is good! That would be a proper motter. Can't thee see, brother, that it reads—"Real guano, bone manure." There's sense in that motter, brother—good sense, and that is just wot we want to teach young Tummas. So take my advice, and send him here.'

"So I was sent to Dr. Canelinn's. But look here, Geo' don't you think there are a great many people like old Uncle Toby—eh?"

(To be continued.)

PHOTOGRAPHY AND THE SUN'S SURROUNDINGS.*

WE take next a brief description of the rays as seen by Mr. Alfred C. Thomas, from Capitol Hill, near Denver City. "In the plane of the ecliptic," he says, "the streamers of light extended for about $1\frac{1}{2}$ times the diameter of the moon." Three accounts, then—Mr. Lockyer's General Myer's, and Mr. Thomas's—agree in describing the extension of the rays in the direction of the ecliptic. We might quote other accounts, for, in fact, many observers saw these ecliptic streamers. They were seen by so many as to leave no doubt of their reality. We have now, however, to consider the evidence of those who saw these ecliptic rays to a much greater distance, and of one observer who saw also rays at right angles to them which other observers failed to recognize, but which must not on that account be regarded as subjective phenomena.

Professor Cleveland Abbe had intended to observe the eclipse from Pike's Peak, but he was taken ill a short time after reaching the summit, and had to be removed to the Lake House (hotel) on the day preceding the eclipse. Here, without instruments, and too ill to sit up, he made his observations. He could do nothing but observe the corona with the naked eye; but as he gave his whole attention during totality to the coronal rays, his observations are very valuable. By Monday, the day of the eclipse, he had recovered sufficiently to be laid on the ground upon a gentle slope facing westward. He says:—

"I was undisturbed by any other consideration, except to get a true presentation of the rays, which I had hitherto firmly believed to be either in the earth's atmosphere or in the observer's eyes. I went over the region around the sun again and again, at least six times leisurely, during the 161 seconds of totality, and cannot doubt the truthfulness and fairness of my drawing and description."

He saw the streamers which other observers had compared to a wind-vane; but he traced them to a much greater distance than other observers. The point of the vane, as he saw it, reached to a distance from the sun equal to fully

* Continued from p. 459.

six diameters. (A weekly contemporary says six degrees, but Professor Abbe's description and picture, both which we have before us as we write, agree in making the distance six diameters.) This would correspond to more than five million miles. On the other side, the double streamer forming the tail of the vane does not extend (in the picture) nearly so far, not more than three or four diameters, or about three million miles. The breadth of the vane where it crosses the sun is almost exactly equal to the sun's diameter, so that the sides of the vane just touch the sun's edge. Athwart the wind-vane streamers, at right angles, and forming a very similar system, lies another set of streamers, a pointed one above the sun corresponding to the pointed eastern end of the wind-vane set, and a broad, rather fanshaped streamer below the sun corresponding to the broad western end or tail of the wind-vane. The pointed ray extends fully five diameters from the sun. Its light was fainter, which accounts for its having escaped the attention of other observers with less time at their disposal to study the corona with the naked eye. It is very important, especially in connection with the choice of methods for observing future eclipses, to note Professor Abbe's experience on this point. He says:—

"All the details came out only after repeated examinations of the corona, and repeated attempts to draw and note its peculiarities. I am satisfied that a glance of a few minutes will no more suffice to do justice to these delicate phenomena than it could to enable a naturalist to draw the distinguishing features of a new shell or insect, or would enable an artist to correctly sketch in a landscape."

We can, then, understand why other observers, even some who recognized a yet greater extension of the coronal light, failed to perceive the fainter thwart system of rays seen by Professor Abbe. We also perceive that these thwart rays cannot possibly be rejected as merely subjective phenomena. They were seen by Abbe as satisfactorily, and remained as persistently visible, as the ecliptical rays which so many saw; but, being fainter, they were not detected by those who (like all except Abbe) gave only a short portion of totality to the study of the corona with the naked eye.

Only Professors Langley and Newcomb saw the coronal light extending further than the long rays observed by Professor Abbe. Langley, an astronomer to whom we owe the finest drawing of a large sun-spot ever yet seen, was at the head of a party from Pittsburg. Like Myer, he observed the eclipse from the summit of Pike's Peak. We do not know whether he adopted any special method of observing the faint outlying part of the coronal luminosity; but he traced it in the most transparent atmosphere to a distance of 12 diameters of the sun on one side and three on the other. Its extension was in the direction of the ecliptic, and the light resembled the zodiacal. In other words, what Langley saw at a distance of about 12 diameters from the sun was a faint and softly-graduated luminosity, not the separate rays seen to a distance of about six diameters only. Newcomb saw a similar luminosity, and traced it to the same distance from the sun. Like Langley, also, Newcomb seems not to have specially observed the long rays seen by those who examined attentively the regions closer to the sun. As Newcomb used a screen which concealed these regions from view, during at least part of the time devoted to observations with the naked eye, we need not be surprised that he failed to see features which Cleveland Abbe, studying these regions alone during the whole of totality, found sufficiently delicate to require his whole attention.

From a comparison of all the observations the following important conclusions seem established beyond all possibility of doubt or question:—Outside the solar sierra, averaging some 6,000 or 7,000 miles in height, comes the prominence region, extending about 100,000 miles from the sun's surface. Outside this comes the inner corona, shining in part with its own light, sometimes coming chiefly from

multitudes of solid or liquid bodies in a state of incandescence, sometimes chiefly from glowing vaporous matter. This region extends from 200,000 to 500,000 miles from the sun. Beyond the inner corona is the outer corona as already known and photographed during the eclipses of 1870 and 1871, and extending about a million miles from the sun. But far outside the outer corona there is a region occupied by matter so situated and so illuminated (or possibly self-luminous) as to present the appearance of long rays extending, if we may judge from observations hitherto made, directly from the sun to a distance of 5,000,000 miles. Outside this region again lies another in which, whether by the combination of multitudes of such rays as are seen separately close to the sun, or through the presence of matter in other forms, a softened luminosity prevails which during total eclipse can be traced along the zodiac at least 10,000,000 miles from the surface of the sun. Lastly, from observations made during evening twilight in spring and during morning twilight in autumn (at which twilight hours the zodiac near the sun is most nearly upright during the year) we can trace the extension of the zodiacal luminosity seen by Langley and Newcomb, to distances exceeding seven or eight times at least those to which they traced it during total eclipse. Nay, there are reasons for believing that at times this luminosity has been traced to such a distance from the sun as to show that the zodiacal matter extends much further from him than the orbit of our own earth.

(To be continued.)

SOME FUNDAMENTAL POINTS TO BE OBSERVED IN CARBON PRACTICE.

DR. VAN MONCKHOVEN gives the following hints:—

1. Formula for the sensitizing bath:

	During Summer.	Fall and Spring.	Winter.
Temperature	15 at 30° C.	16 at 22° C.	10 at 15° C.
Bichromate of potash	... 200 gram.	... 250 gram.	... 300 gram.
Carbonate of ammonia	... 30 "	... 15 "	... 10 "
Water	... 10 litres	... 10 litres	... 10 litres

In the summer, during hot spells, renew the bath twice a week; in winter time only once. Old baths yield grey proofs and insoluble films.

2. Never neglect the addition of carbonate of ammonia, this salt securing the solubility of the paper in the drying process. Non-solubility results in a lack of adherence when transferring on glass or paper; also in difficulty of development, tearing off the film in patches during development, &c.

3. Keep the bichromate bath in a cool place, and also sensitize the paper in a cool place. It is useless, during the summer, to add ice to the bath, for, unless a large quantity is added, and that in small lumps, no lowering of temperature will be obtained thereby, as the air warms up the bath as fast as the ice cools it down.

4. The carbon paper, whether in summer or winter, must be immersed fully three minutes in the bichromate bath; it is then to be slightly scraped to extract from it exactly the excess of bichromate, so that the sheet will not drip any more. If scraped too hard the pictures will lose their half-tones when developing. If not scraped at all, the gelatine will, during warm weather, melt while drying. If the carbon paper does not remain long enough in the bichromate bath, it will be deficient in sensitiveness; the half-tones will not stand developing; every defect of evenness in the film will appear, and it will be found impossible to develop satisfactorily plain tones or graduated white backgrounds.

If the weather is very warm, the gelatine will run off at the bottom of the sheet. When this is the case, lay it flat

upon a piece of dry cardboard, and set it to dry in a horizontal position.

5. Effect your drying in a draft of air.

6. To avoid shrinking* during summer, use simply very cold water (below 13° C.) to soak the papers in after exposure, and keep them under the water while they absorb it. If they are allowed to come to the surface, they absorb heat from the atmosphere, and will shrink.

Carbon paper soaked in water, after exposure, must curl up slowly when taken out. If it curls up quickly, the image is liable to shrink.

During summer, cold water must be used directly from the well, and used immediately; it will have sometimes to be made still cooler by adding ice, crushed into very small lumps, as large ones dissolve slowly, thereby failing to cool the water fast enough, because the air tends to warm it up again rapidly.

Simple transfer papers, or plates upon which are transferred prepared papers, must not be soaked in such cold water, and a separate dish may be used.

SILVER SOLUTION FOR ALBUMEN OR PLAIN PAPER.

BY JOHN R. OLEMON.†

MAKE a solution of nitrate of silver in water, up to required strength, and render it perfectly neutral. Then to each ounce of solution add 2 grains of nitrate of potash, and not less than 3 grains of washed chloride of silver—3 grains is the lowest quantity that should be used, but a larger proportion would be more beneficial, the quantity being limited only by the amount of room it occupies in your bottle, 10 or 15 grains to the ounce being none too much. Shake the whole well together, and expose to sunlight until the precipitate becomes darkened, occasionally shaking or stirring, so as to bring the whole mass under the action of light. When the darkening process is accomplished, the clear solution is ready for use, and is undoubtedly as pure a silver bath as can be obtained. The slight acidity arising from the action of light upon the chloride should not be neutralized.

This bath never requires boiling or "fixing;" excepting, of course, that the chloride will decrease by continued use, when it will be necessary to add a fresh supply. When work is done, pour your solution back into the bottle containing the precipitate, shake well, and place in sunlight. This is all that is necessary.

If, however, you should prefer filtering your solution, you will perhaps find a slight discolouration, arising from the extreme sensitiveness of the silver carrying some organic matter from the filtering paper (few brands are really "chemically pure"). In this case pass your solution again through the same filter, and it will be perfectly clear. Paper silvered on this solution keeps well even in hot weather.

In addition to the above I prefer to add a small quantity of glycerine to the bath in the proportion of 1 ounce of pure glycerine to 12 ounces of solution. It will be found to add very much to the brilliancy of the prints, and prevents the paper from curling so badly when drying.

Almost any good toning formula will do: perhaps the ordinary "sal soda" bath is the most reliable, if made fresh every day, and made up a few hours before using.

Hypo ...	...	...	...	...	1 part
Water...	...	...	...	...	8 parts

Fix ten to twelve minutes, keeping prints in motion during the whole time.

Fume from fifteen to thirty minutes, according to the size of your fuming-box and the condition of the atmosphere.

* Retraction or shrinking is a defect which is observed when the image is being developed, and while drying. The coating is dull by reflection instead of being bright, and it is entirely withered, and as if covered over by a black web, which destroys all fineness in the picture.

† *Practical Photographer.*

PHOTOGRAPHY OF THE SPECTRA OF GEISSLER'S TUBES.

BY DR. VOGEL.*

THE spectrum of hydrogen, which appears to the eye to consist of only four lines, showed when photographed upon gelatine plates, besides these four lines, hundreds of lines in the blue, violet, and ultra (invisible) violet. Many of these are light and delicate, while some are of extraordinary density. Among these are, besides the mercury lines, four lines in the ultra violet and one which coincides with the thick first H line of the sun's spectrum. The length of the undulations of the lines was measured, and their position as respects the Fraunhofer lines of the sun's spectrum determined.

The spectrum of mercury in the Geissler tube furnished in the photograph, besides the remarkable lines in the blue and violet which Thalen saw and measured, a surprising group of lines lying far into the ultra violet (length of the wave of the outermost, 3650). The spectrum of the mercuric spark in the open air coincided in many points with the spectrum of mercuric vapour in the Geissler tube, but it also differed from it in a surprising way. Thus, in the spectrum of the Geissler tube, the distinct line close by H in the violet was absent, while on the other hand, in the violet and ultra violet it showed a variety of bands which were not present in the spectrum of the spark in the open air between the poles of mercury.

The spectrum of nitrogen in the Geissler tube furnished a very characteristic photograph, with magnificent lines in the violet and ultra violet. Several of the latter far exceeded in intensity the visible lines in the violet. The appearance of the lines in the photograph was quite different from that which is given to them in ordinary drawings; they formed no simple shaded-off bands, but sharply defined lines, at the most strongly refrangible side of which lay a weak, washed-out looking band.

The nitrogen lines in the pale blue, which appear strongest to the eye, exercised but a slight action on the photographic plate, and on the green lines even a slighter.

If nitrogen and mercury be both inclosed simultaneously in the same Geissler tube, with a spark, one gets the lines of both elements; but if the tube be warmed, the nitrogen lines disappear and only the mercury lines remain. This has already been observed by Herr C. Wiedemann. Thus, if one were to photograph upon the same plate the spectrum of a nitrogen tube containing mercury in a cold and in a warm condition, he would easily get the spectrum of nitrogen and that of mercury together, and by comparison he would be able to recognize which lines belong to one element and which to the other. The nitrogen spectrum reaches as far into the ultra violet as the mercury spectrum.

Then I photographed the spectrum of an electric spark struck through atmospheric air, oxygen, and carbonic oxide gas. Thus upon one and the same plate we had all together the spectra of oxygen, atmospheric air, and carbonic oxide gas. The comparison of the pictures showed that the carbonic oxide gave by preference oxygen lines, and that by the spark it was decomposed into oxygen and carbon (the latter was actually visibly drawn out to the poles).

It was further observed that the spectral lines which are ascribed to the atmosphere are very different in character according as the different poles are used. For example: the spectrum of the air between mercury poles is very matt and undetermined; that obtained between platinum and aluminum poles is much more brilliant. Many of the lines in photographs of spectra of the air obtained in this way coincide, but many others do not, showing undeniably that the spectrum of one and the same substance may suffer by the presence of modifications which are very likely to arise. The changes in the spectrum of certain elements—as calcium, lithium, iron—which Lockyer ascribes to a decomposition of the elements, should therefore rather be attributed to the influence of foreign substances.

* *Methoden.*

The Photographic News.

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EXAMINATIONS IN PHOTOGRAPHY.

If endowment and encouragement were the sure aids to the advancement of scientific knowledge which they are fondly believed by many to be, science ought to progress rapidly in our day. It has been not uncommon in different periods of history to raise outcries against the alleged indifference of Government, and against other bodies in power, for withholding countenance and encouragement to science. We find Sir David (then Dr.) Brewster, just about fifty years ago, lamenting with pathetic earnestness that science was unrecognized and uncared for in high places in this country, adding the seathing remark that England had "renounced by Act of Parliament her patronage of the sciences most intimately connected with her naval greatness," in which he referred to the abolition of the Board of Longitude in 1828. We have no intention, however, of entering into the discussion as to whether science or knowledge generally flourishes best under the influence of the patronage of great ones, or whether it languishes and grows faint as it loses its independence. Complaints have not been unheard in our day of the niggard endowment of science, and to the effect that places of profit in the conduct of the State are rarely given to scientific men, to whom income and leisure would be beneficial inducements to aid in the advancement of science by which the country would be the gainer. We do not share in the spirit of these complaints, but have no intention to discuss them. We were led aside for a few moments in contemplating the encouragements to students offered by the multiplied facilities for examinations and the inducements of prizes offered.

We have just received the programme for next year of the Technological Examinations projected for the advancement of technical education by the City and Guilds of London Institute. In this programme our readers will be interested to learn that photography forms one of the subjects for examination and the distribution of prizes.

The City and Guilds of London Institute for the Advancement of Technical Education will afford facilities for carrying out examinations on certain subjects specified in its programme, and provide liberal prizes for efficiency in the students throughout the kingdom, provided local committees will undertake to carry out the examinations according to the rules laid down. The committee of any Art or Science School under the Department at South Kensington, or any School Board or Local Examination Board connected with the Society of Arts, will be accepted as suitable for carrying out these examinations.

The examination will be in three grades:—I. Honours; II. Advanced; III. Elementary. Grade I. is intended principally for foremen, overlookers, &c.; Grade II. for journeymen; Grade III. for apprentices; but candidates

may enter themselves for any grade they choose. Certificates (first and second class) will be awarded in each grade. Candidates who have taken a certificate may be again examined for one of a higher grade or class in another year.

Any person desiring to be examined may present himself, but before he can take a certificate in technology he will be required to have passed the Science and Art Department examination in certain science subjects. There is no limit of age. Intending candidates should apply to the secretary of the nearest local committee, who will forward their names to the Central Office in London, and through whom all information will be furnished. It is only in the case of candidates failing to make arrangements with the local secretary that any application can be considered by the Central Office.

The examinations are conducted by means of printed papers, and the answers are written upon paper specially provided for the purpose. The papers are sent down in sealed envelopes to the secretary of the local committee immediately before the day of the examination, and the envelope containing the papers is opened by a member of the committee, in the presence of the candidates, on the evening of the examination. A number is allotted to each candidate, and he is known to the examiner only by that number. The worked papers are sealed up at once, and despatched to the office of the Institute. The certificates and prizes will be forwarded to the local secretaries as soon after the examination as possible. No application on the part of any of the candidates is therefore necessary.

The following are the subjects included in the scheme of examinations:—Alkali manufacture, blowpipe analysis (practical), brewing, calico bleaching, dyeing, and printing, carriage building, cloth manufacture, cotton manufacture, electro-metallurgy, gas manufacture, glass manufacture, goldsmiths' and silversmiths' work, iron manufacture, lace manufacture, oils, colours, and varnishes (manufacture of), paper manufacture, PHOTOGRAPHY, pottery and porcelain, printing, silk manufacture, silk dyeing, steel manufacture, sugar manufacture, &c., tanning leather, telegraphy, watchmaking, wool dyeing.

The following prizes will be given in each subject:—Honours—1st prize, £5 and a silver medal; 2nd prize, £5 and a bronze medal; 3rd prize, a bronze medal. Advanced—1st prize, £3 and a silver medal; 2nd prize, £3 and a bronze medal; 3rd prize, a bronze medal. Elementary—1st prize, £2 and a silver medal; 2nd prize, £2 and a bronze medal; 3rd prize, a bronze medal. No first prize will be awarded to any candidate obtaining less than 85 per cent. of the full marks, and no prize to any candidate who does not take a first-class certificate.

I. The examination in Photography will include questions founded on such subjects as the following, but will not necessarily be confined to these subjects:—

1. The characteristic properties of pyroxyline for the manufacture of collodion, and the various substances employed for the purpose, as well as the solvents, such as ether, alcohol, wood naphtha, &c. Different qualities of collodion.

2. The various processes, both wet and dry, including the Daguerreotype; and the principles involved in each. Emulsions, both with collodion and gelatine, paper processes, developers, acid and alkaline, intensifiers, &c.

3. Processes for portrait work, landscape work, copying pictures, maps, engravings, and documents of all kinds. Printing in silver, and other metals, in carbon, Woodbury-type, vitrified enamels; toning, and fixing.

4. Special applications of photography to engraving, typography, photo-lithography, including the various processes for collotype, &c.

5. Special applications of photography to astronomical and microscopical purposes, as well as for recording meteorological and other observations.

6. Lenses and the various purposes for which they are

specially adapted. The construction of cameras, and other apparatus, &c.

II. For the full Technological Certificate, the candidate will be required to have passed at least in the elementary stage of one of the following science subjects:—

8. Acoustics, Light, and Heat.

10. Inorganic Chemistry.

11. Organic Chemistry.

We have given the information, without comment, as it appears in the programme of the Institute; but we must remark, *en passant*, that it is very gratifying to find the ancient and honourable guilds of the City of London abreast with the age in encouraging technical education, the conservation of which was one of the aims of their foundation.

To working photographers these offers hold out especial advantages. There has long existed a feeling in the minds of many to the effect that the status of photography, and the qualifications of photographers, would be greatly elevated if some authoritative examination existed empowered to give certificates of merit. The desire was laudable, and the necessity great; but when its fulfilment seemed most hopeless, here the *deus ex machina* is suddenly presented. We heartily hope that many young photographers will avail themselves of the opportunity, and that the incentives offered will produce earnest and successful students.

There is, by the way, one fact connected with the information which we find we have omitted, and with much pleasure add here, believing it will constitute an additional incentive: the appointed examiner in photography is Captain Abney, F.R.S.

FRENCH CORRESPONDENCE.*

PHOTOGRAPHING THE NATIVES—GELATINO-BROMIDE DRY PLATES—TRIAL OF DRY PLATES BY PHOTOGRAPHIC EXCURSIONISTS IN NORMANDY—MULTIPLICITY OF FORMULÆ FOR EMULSIONS—GREAT DEMAND FOR PHOTOGRAPHIC VIEWS OF THE COAST OF NORMANDY.

Photographing the Natives.—As we are on the subject of incidents of a comic character, it would be wrong to omit mentioning one of that kind which occurred the other day at Brussels. In the Zoological Gardens of that city there has now, for some time, been a troupe of Zulus exhibiting. These interesting beings had attracted much notice by their various feats and antics, showing that the *locale* for their exhibition had been selected with admirable appropriateness. The other day the Director of the Gardens was seized with the idea of having the natives photographed, as they were soon about to leave the place. When the Zulus caught sight of the photographic apparatus, their amazement was indescribable; they danced about like creatures possessed. They cried, they laughed, they clapped their hands, and finished by seizing the wide-awake of the unfortunate photographer and wrapping themselves in his focussing cloth, in which costumes they assumed attitudes anything but academic. Suddenly, when the objective was directed at them, and the photographer began to make frantic efforts to induce them to keep quiet for a moment, they became angry and suspicious, and, no doubt taking the instrument that was directed at them for some implement of war, and the supplicatory gestures of the artist for threats, they set to demolish the camera; some seized the dark slides and plate-boxes, others the focussing glass and camera legs. Never was a stranger sight seen; had it been known beforehand that such a scene would take place, many would have paid heavily for a seat to see it. Fortunately for the photographer, a brewer's cart chanced to pass near, on its way to the restaurant of the gardens with a load of bottled beer, and the Zulus, whose excitement was increased on beholding it, at once

threw themselves on this unexpected booty. So they let go the camera and its owner, who, glad enough to escape, swore he would never again attempt to take any specimens of a savage race. As for the Zulus, when they had emptied a number of bottles, they lay down and slept off their drink as if nothing had happened; this was the last stage of this attempt at *Zulugraphy*.

Gelatino-Bromide Dry Plates.—To return, however, to more serious matters which we must not neglect, though there is very little space left. There is just now a great run on dry plates here; every one wants to try them, and it is really time they did so. Several manufacturers of dry plates have sprung up, as if by magic. In addition to those houses already established, whose managers had not been afraid of failure and groping their way, we can now name in France those of Messrs. Garbe and Laisne (the one a chemist, the other a photographer, who have entered into partnership), and of M. Eugene Cheron, an operator well known for his artistic photographs; and in the Netherlands Messrs. Wegner and Mottu, at Amsterdam, who have succeeded in producing first-class plates. It has been asserted in Paris that these gentlemen were only agents for plates imported from England, but this is a mistake, which it is important to rectify; their wares are all their own make, and are all produced at their Amsterdam shops. I cannot refrain from wishing complete success to all these gentlemen who have so courageously undertaken the risk of starting a new industry.

Dry Plates for Tourists.—I send you the following part of my letter from the beautiful country of Normandy—from the very spot where William the Bastard embarked in 1066 for the conquest of England. I have found my way hither in order to join the excursions organised by the *Société Française des Archives Photographiques, Historiques, et Monumentales*, and I am in consequence able to state with very great pleasure that dry plates are at last commencing to make their way among us. Tourist photographers now acknowledge that, for them at all events, there is a rich mine to be worked in the practice of the new process. It is, therefore, easy to understand the enthusiasm with which were received the numerous successful trials made during these excursions. After having examined the principal pictures that were taken, and satisfied themselves of their success, the members of the Society naturally discussed the new process which is destined to completely revolutionise the practice of photography, and in my capacity of a faithful chronicler of events I think it right to lay before you a general resumé of the opinions that were formed.

Multiplicity of Formulæ for Emulsions.—Great complaints were made of the confusion into which one was liable to fall in the preparation of gelatino-bromide emulsions. Every day new formulæ are published, or some one has discovered a better method than that of his neighbour. If I were compelled to prove the real value of every attempt that is brought forward, and to follow all the experiments that are recommended, I should be obliged to pass my time from morning to night in the laboratory, and, after all, I should labour under the disadvantage of being quite unable to say which is the best method of preparing gelatine emulsions. Now this would be running the risk of losing an enormous amount of time, which is much more valuable than the best dry plate ever turned out. Besides, I should be led about from Peter to Paul at the beck and call of every one who professes to have invented something new, and when I had taken the trouble to investigate the so-called invention, I should probably find that it differed only in name from some well known method, which the self-styled inventor had varied in some slight degree by substituting in a formula one product for another possessing the same properties. I think your readers will agree with me that such proceeding as this is more like meddling and muddling; but the same thing will occur again and again so long as we listen to every pushing individual

* Continued from page 451.

whose only object is to bring his own name prominently before the photographic world. Unfortunately, if the real and earnest inquirer suffers himself to be led away by these will-o'-the-wisps, the cause of true scientific investigation cannot but suffer. The truth of these remarks can be established on reference to the transactions of any of our photographic societies. No sooner does one pretended discoverer get up to vaunt the excellence of his own special discovery, than half-a-dozen others rise, not to expose the defects of his process—they are generally too polite to do that—but to declare that they themselves had previously discovered the same, or a similar, thing. It is quite right to accept improvements and to follow them, but it is time to put a stop to this continual production of new formulæ, each of which differs very slightly from others previously published. It calls to mind a number of physicians prescribing for the same malady, each one writing a different prescription, yet knowing that it is no more likely to do the patient any good than his predecessor, and on this account, if on no other, the experience gained during the excursions in Normandy has had the effect of convincing both professional and amateur photographers that their best and simplest way will be to use plates prepared beforehand by some experienced maker. It will, as I have already pointed out, save them an infinity of valuable time and space, and much trouble and vexation. Moreover, the time thus gained will be of great service to them, for the new process requires many artificial arrangements, much special knowledge, and, above all, a very careful manipulation with the camera. M. Letellier, the President of the *Société Française des Archives Photographiques*, insists very strongly on these points, for, as he says, one can only become a smith by knowing how to forge. He has gone further, and attempted to put his views into practice by publishing a little manual of instructions how to work with dry gelatine plates, a careful perusal of which ought to enable a photographer soon to acquire sufficient dexterity to produce results as successful as those obtained by the members of the Society who joined the excursions in Normandy.

Demand for Photographic Views on the Normandy Coast.—Wandering along the picturesque shore of Normandy, among the sites of an infinite variety of historical monuments and works of art, which one is never tired of admiring, contemplating there both the beauties of nature and the masterpieces of human genius, one is led to understand the great sale there is in this privileged country for photographic views and reproductions. Travellers and tourists from all parts of the world, and especially artists, who, equipped with their easels and mahl-sticks, may be met with at every corner, look for them with eagerness and buy them with avidity. Thus our three best landscape photographers—MM. E. Letellier, Neurdein, and A. Davanne—have taken a large number of views which, especially during the season, are sold as soon as they are exhibited. These of M. Davanne have perhaps an advantage in one respect, which is that they are sold at a much lower price.

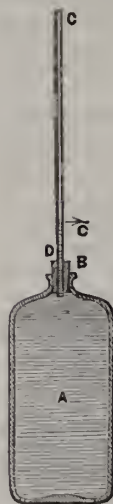
K. VERSNAEYEN.

MONCKHOVEN'S PHOTOMETER FOR THE STUDIO.

IN his letter published in our issue of the 26th September last, our valued French Correspondent, M. Leon Vidal, mentions a new photometer for the studio, the invention of Dr. Van Monckhoven. We have now received from the Editor of the *Bulletin Belge* Van Monckhoven's own description of the instrument, of which we give a translation below:—

Dissolve 100 grammes of uranium nitrate in 200 grammes of water; pour the solution into a porcelain basin, and heat it over a Bunsen burner; add gradually a hot concentrated solution of ammonium carbonate and

water, when a brisk effervescence, caused by the disengagement of carbonic acid gas, will occur, and a yellow precipitate of uranate of ammonia will be formed. Continue to add the ammonium carbonate, and the precipitate will be redissolved, until the liquid becomes quite clear. This is owing to the uranate being soluble in an excess of ammonium carbonate. Now leave the solution to cool till the next day, and the bottom of the basin will then be found to be covered with crystals of the ammonio-carbonate of uranium; these crystals must be lifted out, placed on a piece of blotting-paper, and dried slowly in a drying oven. Then make a solution of 30 grammes of oxalic acid in 200 grammes of water, put 50 grammes of this salt of uranium into it, and shake the mixture. The uranium salt dissolves with the evolution of carbonic acid, and uranic oxalate is formed; this must be filtered into a flask, A (see fig.), made to hold exactly 250 grammes, and the flask



is then filled up to the neck with water. Into the neck of the flask is fitted an india-rubber cork, B, which is pierced, and carries a tube, C D, about 30 centim. in length. When the cork is pressed down in the neck the liquid rises to the point G; in order that it may do so the lower end of the tube must project a little beyond the bottom of the cork, but not to a greater distance than one or (at the most) two millimetres. The tube must also be furnished with a movable scale on paper, graduated to centimetres and millimetres. If the instrument is to be used as a photometer for the studio the bore of the tube must be one millimetre in diameter, but for the carbon process it should be four millimetres.

As the liquid is affected also by heat, the instrument must be left for some time in the place where it is to be used, in order that it may have the same temperature. To prevent the light from acting on it, it may simply be kept under a cardboard shade. So soon as it is exposed to daylight the liquid will be seen to rise in the tube, and if the light be strong, and the tube (D C) very narrow, it will reach a height of several centimetres in less than a minute.

If the flask have a capacity of half a litre, and the bore of the tube be one millimetre in diameter, the action will be so rapid that the reading may be taken at the end of thirty seconds. As the colour of the solution is rather of a pale green, it may be made stronger by aniline violet, which will enable the liquid to be easier seen in the tube.

The action of the apparatus is as follows:—Under the influence of light the uranic oxalate is converted into the corresponding uranous salt, and a certain quantity of gas is liberated, which accumulates in the upper part of the flask, and causes the liquid to rise in the tube by an amount directly proportional to the action of light. To allow the gas to escape, and the column of liquid in the tube to fall to its ordinary level, it is only necessary to loosen a little the cork, B, in the neck of the flask.

This photometer possesses a very great advantage over those in use among photographers, namely, that it does away with the necessity of comparing different tints in order to read off the degree of photogenic action. If it be kept clean, by pushing an iron wire through the tube from time to time, the instrument will last a long time. In 1840, Draper pointed out that ferric oxalate could be made to serve as a photometer, and at a later period Marchand actually employed that substance with success for the purpose indicated. But the oxalate of uranium is much more sensitive than the corresponding salt of iron, though its use in that capacity has hitherto never been suggested.

"However," as Dr. Monckhoven adds in conclusion, "the question of priority is of no importance. All that I desire to point out is, that photographers can make excellent use of this instrument in the carbon process, and especially for determining the necessary length of exposure in the glass studio."

Correspondence.

A CHEAP INSTANTANEOUS SHUTTER.

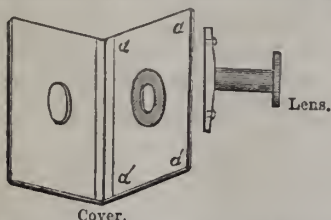
SIR,—I think there is no worse policy than that of the various manufacturers of apparatus "laying it on thick," especially in small matters. Notwithstanding the competition in such matters as cameras, if we come to calculate and consider, it will be found the prices charged afford a very fair profit for time and material; but when we go further to require tripod stands, inner frames, extra dark slides, the price asked is unreasonable, and manufacturers and dealers must not be surprised if a co-operative undertaking proves successful, or if the ingenious youth tries to do without superlative luxuries.

A few days ago, I wanted to try an experiment with dry plates which required an absolutely instantaneous exposure, or at least one which would be a mere flash. On enquiry, I found I could not obtain anything like a dark shutter under seven or eight shillings, others mounting up to still higher prices. Now on looking at these apparatus, I thought the price exorbitant, and not being a Cræsus, I had either to give up my idea, or try some other means: and with less than half-an-hour's thought, I had sketched out the plan of a machine which I thought would answer, and which I successfully carried out with (in all) about an hour's labour. The materials were all at hand, and I did not disburse one half-penny. I will therefore proceed to show how my photographic brethren may do the same, and I have no doubt with a little gumption we might save ourselves many a penny, a shilling, and a pound.

I must premise that I had a very quick Grubb's lens, with an outer flange about one-teuth of an inch thick. My first care was to collect from a heap sufficient old postage cards to make two boards of the same thickness; this can be done by gumming or pasting them together, then laying a weight on them and leaving them till next day to get dry. I next trimmed them with a sharp knife and straightedge to the same size; and now in one I cut a circular space, just large enough to receive the flange. Over this, I again fixed two more cards, and made a smaller aperture the size of the opening of the front of the lens.

Another aperture was cut in the second card to receive the body of the lens, and the two were united at one side by a piece of stout linen to open like the covers of a book.

The next thing to do was to cut two strips (off an old quarter-plate) of glass a quarter of an inch each, and two of



a little more than three-eighths wide. The narrower of these were cemented on the outside of the cover in the direction

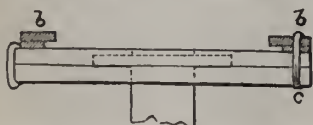


Fig. 2.

a. a. a', and the wider strips upon the other, forming a

groove (Fig. 2) *b b*, an india-rubber ring; *c*, serves to keep it close. The whole, to make a little more presentable, was finished off with orange paper, from the packets of dry plate. I now made out of a strip of thick card the shutter, Fig. 3,



Fig. 3.

which fitted the groove formed by *b b* easily, cutting out a hole *d*, the size of the lens, and covered with black paper from the same source. When the whole was dry and worked well, it was surprising by a quick stroke how brief was the flash of light on the ground glass; but even this I had to reduce by making a second slide, with a small slit instead of a circular opening. Thus, I constructed an admirably working instrument, without extra outlay, and mostly from waste materials.

I would suggest that in cases where a landscape has to be taken, an extra slide be kept with a circular opening; over this might be pasted a piece of black card with three slits thus, which could be improvised on the spot; the object of



the slits is to give a contracted exposure to the sky, and a larger one to the foreground. Other devices will suggest themselves to the minds of the ingenious.—I am, yours obediently,

SOLOMON SMUDGE.

RAPID COLLODION EMULSION.

DEAR SIR,—Whilst everybody is enthusiastically chaunting the praises of gelatine, may I recall for a moment attention to an old and faithful servant of the photographer—collodion?

By your permission I will restate, for the benefit of your readers who may not have seen Mr. Williams's articles in your contemporary, a very simple, rapid, and effective process with collodio-bromide emulsion, briefly adding my own experiences therewith. I will give the process in condensed form from Mr. Williams's two articles, adding remarks of my own, as comparing it with the much-vaunted gelatine process.

To begin, then, Mr. Williams states that rapid emulsion can be made by a permanent excess of silver, corrected by an acid; but that such emulsions change very rapidly, and, in his hands, "wash" very imperfectly—that is, the process of washing seems to remove all properties of giving reasonable density—and, after carefully noting the propensities of permanent excess of silver, he decided to observe the effects of temporary excess, restoring the emulsions afterwards to a condition of excess of bromide. He tried emulsions in which the silver was in excess, some for a very few hours, and others for days, and arrived at the conclusion that a very few hours of excess suffices to produce the change sought for. For the preparation of the plain collodion, Mr. Williams recommends the use of celloidin, though he has no doubt that the formula would work well with any other cotton with, perhaps, some slight variation. The formula for eight ounces of emulsion is as under:

Celloidin (4 grains per ounce of solvents)	32	grs.
Methylated spirit (824)	...	2½ ozs.
Methylated ether (725)	...	4

The celloidin should be cut up, and put into a large bottle with the solvents, and the bottle laid on its side so that the celloidin presents as large a surface as possible to the solvents. After about a couple of days, during which it should have a good shake now and then, you will

have a good plain collodion, and the bottle may now be placed upright, when, according to theory, no deposit should take place, as celloidin is a normal cotton, dissolved, filtered, and then evaporated, so that by its use we save, at least, all trouble of filtering or decanting, which, with some samples of high temperature cotton, is a very difficult, troublesome, and wasteful operation.

With regard to the bromides, Mr. Williams states that none gave results (in his hands) equal to the double bromide of cadmium and ammonium, which is easily made by placing in a crucible (porcelain) of (say) six or eight ounces capacity—

Bromide of ammonium	...	...	98 grains
Bromide of cadmium	...	...	172 "

Add a drop or two of water, and liquefaction will take place. Put the crucible over a spirit lamp, and the salts will dissolve and boil, become dry, and then fuse into a solid lump, which should be extracted from the crucible, and powdered in a mortar, and bottled off into a clean, dry bottle, closely corked. The equivalent of the double salt is 117.

Mr. Williams says his deductions carry him to the hard fact that perfect collodion emulsions should require no preservative whatever, especially as any preservative used after coating renders a given film insensitive to a certain degree. A perfect emulsion film must be normal, and, therefore, not liable to change; any organifier or reducing agent in a film lurks there, ever ready to engender a spontaneous change, which may take the form of insensitiveness, or, worse still, that desensitizing or destruction of the impressed image after exposure. These drawbacks can scarcely be urged against soap, because, according to Messrs. Fox, Bolton, and other well-known writers, soap forms an oleate of silver if introduced into the bromised collodion before sensitizing. Glycerine, too, favours openness of films, but washes out, whether the emulsion be used as an unwashed or a washed one. He purchased a bar of glycerine soap, hoping it might be what it purported to be. An alcoholic solution thereof was made, and it is this that will be mentioned in following formulæ.

The celloidin having been dissolved previously as directed, you can rely upon one uniform condition of the plain collodion, and by pouring a quantity thereof into a bottle marked with a scratch corresponding with the amount required, accuracy and uniformity are combined. Having then ready your plain collodion in the quantity above given, add the bromide as under:—

Double bromide of cadmium and ammonium	...	56 grains
Alcohol solution of glycerine soap	...	2 or 3 drms.

When the double bromide is all dissolved, sensitize with—

Silver	125 grains
		in	

Methylated spirit	...	1 ounce
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The silver should be dissolved in the smallest quantity possible of water, by heat, in a boiling flask, and the alcohol added in the usual way, reserving a little of the alcohol to rinse out with. Ten hours afterwards, correct with—

Double bromide	...	30 grains
	in	

Methylated spirit	...	$\frac{1}{2}$ ounce
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With regard to the sensitizing, a word of caution is added: not to attempt to get the silver in a too concentrated state. A few drops of water and plenty of alcohol will make a solution which will not crystallize in pouring in. It is found by experience that concentrated solution of silver will crystallize the instant it enters the collodion, hence a considerable insoluble precipitate of minute crystals, no doubt enveloped in a skin of bromide of silver; and it is proved to my satisfaction that an emulsion containing much insoluble matter at the bottom of the bottle never works so well as one with little. A few drops of hot water in eight ounces of emulsion can make but little matter. Twelve hours after correcting, if this emulsion

be tried, and if it has not had nitric acid added on the first stage, it is probable it will fog. The experimentalist is advised to use nitric acid in the first batch he makes under this formula—say 2 drops per ounce, or 15 drops to the lot. Afterwards he may risk it without. Mr. Williams states he has tried the effect of adding two drops at a time, trying a plate between each addition, and when clean, leaving it so. He also tried a large ultimate excess of bromide by dropping in bromide of zinc in alcoholic solution at the rate of one grain to each ounce of emulsion. The emulsion is ready for use twenty-four hours after being first compounded. Used unwashed, each plate coated separately, and exposed wet, he has obtained out of doors in diffused light portraits instantaneously, and in varying light an exposure of two to three seconds has been enough and too much.

This emulsion works equally well, either unwashed or washed, though it is doubted if unwashed emulsions would be suitable for the studio.

The following is the plan given for washing. Clean a dish with French chalk, and pour out your emulsion a quarter of an inch deep. Allow it to set in a warm place, and dry by gentle heat until the pellicle leaves the dish in a sheet like chamois leather, and is dry enough to be torn like blotting-paper. Tear the sheet up into pieces an inch or so square, and it will be about right if you can just see through the pellicle. A "bee glass" is recommended as a very good washer. Strain two thicknesses of muslin over the open end, and tie round with string. The hole in the nob allows the pellicle to be put inside, and the water also; but the simplest way is to put the washer in a basin (or jar) of water, and souce it up and down. Half a dozen changes of water and one night to soak, will remove all free salts, &c. After washing, lay the pellicle out on a dish to drain, and place on the top of the dark-room lantern or other similar contrivance. Watch matters till you see the pellicle shrivel up and snap readily in the fingers, and are certain that all moisture is removed. Stop the drying. The pellicle is now about the thickness of a wafer, is beautifully white, and retains the polish of the dish. Weigh it, and redissolve at the rate of 20 grains per ounce in equal quantities of absolute alcohol (795) and mythelated ether (725). The resulting emulsion, after twelve hours for solution, is very smooth and creamy, and gives beautiful films, which work well either wet or dry. It requires little or no filtering, merely subsidence, permitting plates to be coated in ten minutes after shaking up, and it will be found that the emulsion remains creamy with very little separation.

Great care is urged in the drying both of the first emulsion and the washed pellicle, and care must be taken not to over-heat either. If the emulsion be dried to a tough skin in the dish by heat it may be known to be ready; when if a sharp paper knife be run round one corner, it splits off with a smart crack, and shrinks to about half the size of the dish; it can then be torn up and washed without fear of losing half of it in the process. This emulsion washes well, gives cleaner pictures after washing than before, and the difference in sensitiveness is hardly appreciable. With regard to development, Mr. Williams states that after dozens of plates prepared with this emulsion he finds nothing so satisfactory as ferrous oxalate, as fog is apt to show itself with alkaline pyro. "Under ferrous oxalate," he says, "no such naughty propensities are visible; the plates develop perfectly clean, and, what is of vital importance, there is a clear gain of twenty-five per cent. in the exposure." Now, for myself, I have never tried ferrous oxalate, as the only plates I have tried with this emulsion I developed by alkaline pyro; but from what I have seen and heard regarding ferrous oxalate, I should judge it to be all that is claimed for it—simple, certain, and producing full printing density at once if the exposure be correct.

An amateur friend of mine who had no previous experi-

ence in photography, save and except that which was to be obtained from a sixpenny manual of the wet collodion process, and with a cheap set of apparatus, such as can be obtained for about £3 or £3 10s., determined to try some of this emulsion, and did so, meeting with such success that he has quite abandoned wet collodion. I may say that, although only an amateur, he is a most careful and precise manipulator, and to that I attribute a great part of his success. Indeed, I have no doubt that anyone, with care and precision in his manipulation, could work these plates with complete success. I tried about a dozen plates prepared with some emulsion of my friend's make, developing them with alkaline pyro, and although, as has been mentioned, they showed a slight propensity to fog, they were in all other respects excellent. But those developed by my friend with ferrous oxalate showed no signs of fogging whatever, and came up to full printing density in a few seconds, besides being beautifully soft and full of detail.

As regards the exposures, it is a real treat to work with such plates. I tried several with a common quarter-plate lens belonging to my friend's cheap set of apparatus before mentioned, and obtained portraits out of doors instantaneously, and one or two in ordinary sitting rooms, on a cloudy day in fifteen to twenty seconds, while in a well-lighted glass-house I got portraits in two to five seconds.

This, I think, ought to be rapid enough for anybody, whilst the saving in time, trouble, and expense gives these plates an immense advantage over the bath process and the costly and troublesome gelatine plates. To quote Mr. Williams's own words:—"Coating a plate with a washed emulsion and placing it in the dark slides as soon as set is a process at once most economical of precious time, and facile as regards its almost amusing simplicity, and I feel convinced that if portraitists would take the matter up and introduce quick washed emulsions into their studios, they would find a wonderful advantage accrue."

I now leave this process to speak for itself, hoping that some of your many practical correspondents will try it for themselves, and give us the result of their experiences.—I am, sir, yours &c.,

COLLODIO-BROMIDE.

LUXOGRAPH PICTURES AT FALMOUTH.

SIR,—Referring to the correspondence which has of late appeared in your pages, I am now in a position to explain matters. I refrained from doing so until I had heard from the Falmouth Polytechnic authorities. I have this day received a letter from the Secretary, together with the correspondence that has taken place both with the Luxograph Company and Mr. Hazard, and at the request of the judges I have the pleasure of informing you that at a special meeting Mr. Hazard has been awarded a first bronze medal for his series of portraits taken at a fancy dress ball. The Luxograph Company have given a full explanation, saying they did exhibit some of Mr. Hazard's productions merely to show the capabilities of the apparatus. I myself think if the Company at the time had made a statement, this unpleasantness would not have occurred, and I also think they were in error to exhibit another person's work without giving notice both to the artist and also to the Society, as they must be well aware that the judges take for granted, and in good faith, that the exhibits sent are the productions of the exhibitor, unless otherwise stated, and are dealt with accordingly; and as several of the pictures arise from the same negative, it was impossible for the judges to decide in the matter. I am very pleased that it has been settled, and, I hope, to the satisfaction of all parties.—Yours very truly,

W. BACOCKS.

MEDALS AT FALMOUTH.

DEAR SIR,—It was not to be supposed that my last letter would be gratifying to Mr. Cocking; but I beg to

assure him that it was not in any way intended as a disparagement of his ability, or to show that he was the first (by a great many) who had placed his name on work not actually his own execution, and obtained a medal for it. My only object was to endeavour to find out upon what principle medals are awarded.

If Mr. Cocking obtains as many medals as will cover the dome of St. Paul's, it will not make the slightest difference to me; and the fact of the Society of Great Britain having awarded a medal last year under similar (?) circumstances does not alter the case now under discussion. "Any number of wrongs will not make one right."

My letter is not in any way a "breach of confidence." I heard the facts I mentioned quite publicly, and not from any one in connection with either of the firms alluded to in my last. I would, however, remind Mr. Cocking that had the picture been labelled "An Enlargement in Carbon by the Autotype Company, from a negative by H. G. Cocking," a "breach of confidence," as he calls it, would have been impossible.

If not too late, let Mr. Cocking send a print from the negative actually taken by him, to the Society's Exhibition about to be held, and I wish him success.

I may not be able to visit the Pall Mall collection, but I shall watch the list of awards with interest.

NOT AN EXHIBITOR.

RECOVERING SILVER.

SIR,—I would be thankful to know the experience of any of your readers in recovering the silver from a cyanide negative dip bath. I think the result should be a financial success.

OLD MAN.

[We presume our correspondent means a cyanide fixing-bath. Evaporating to dryness, and reducing the residue with due proportion of flux in a crucible, will give him metallic silver. The operation would require great care.—Ed.]

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting of this Association was held on Thursday evening, the 25th ultimo, in the Lecture Room of the Free Library, William Brown Street, Mr. J. H. T. ELLERBECK, Vice-President, in the chair.

The minutes of the preceding meeting were read and passed. Mr. R. HOULGRAVE passed round a number of very excellent negatives and prints from them. The negatives were prepared by Captain Abney's gelatine emulsion. He (Mr. Houlgrave) strongly recommended the process, especially to those whose time was limited, as he was able to make the emulsion and coat a dozen plates in an hour and a-half. They were not so sensitive as they would be with a prolonged cooking; but he did not care to be obliged to develop in a very non-actinic light.

Mr. W. H. KIRKBY also spoke of his success with Captain Abney's process. He generally cooked the emulsion thirty-six hours. He had tried ninety-six hours, but then found the films frill badly under development.

Mr. HOULGRAVE described his methods of filtering, and explained that a conical piece of sponge—not pressed into the neck of the funnel, but pulled in by means of a thread near the point of the cone—was far better than any other method. It could be used again and again after washing; and, if employed for collodion emulsion, he rinsed the sponge in ether and alcohol. Cotton wool could also be effectively used in the same way by pulling into the neck of the funnel with a thread, and afterwards drawing the thread away.

Mr. W. E. POTTER exhibited a rapid shutter, which was exceedingly portable and effective, as the beautiful pictures taken by its means testified. A whole-plate view of the mouth of the Mersey from New Brighton Pier, with numerous vessels leaving the port, and one of the Isle of Man steamers passing the pier at full speed, were particularly admired. The shutter was, at the suggestion of Mr. Kirkby, placed between the lenses—in this instance a Ross's doublet—and consists of a brass plate about four inches in diameter shaped a little larger than

a half-circle to leave room for a pivot hole in the centre. The shutter is just the thickness of the stops, and fits into the stop slit, which, however, has to be cut deeper to allow the shutter to revolve. A pin, round which is wound a spring wire the end of which projects at right angles, is passed through the centre hole of the shutter, and slips with its octagonal end into an octagonal socket fastened to the outside of the lens tube. By drawing round the shutter until closed the end of the spring wire presses on a knob of the shutter, which is fixed by a little catch. On this being released by pulling with a string the shutter rapidly revolves, bringing its opening—which is of an oval shape and cut in the centre of the shutter—past the opening of the lens. The octagonal-ended pin which holds the shutter in its place enables the operator to vary the length of his exposure, by fixing the spring to work strong or weak by turning the pin an eighth or quarter round. The shutter can be taken off in a moment, and the lens can be used in the ordinary manner.

Mr. B. BOOTHROYD showed some specimens of platinum printing and explained the process.

A number of prints were exhibited by the Rev. H. J. Palmer, Mr. T. W. Bruce, Mr. Potter, and others, and Mr. J. A. Forrest exhibited a capital view of a rocky promontory on the coast of Wales, which he had taken from a steamer going past at full speed.

The meeting was shortly afterwards adjourned until the 30th instant.

A PHOTOGRAPHIC CLUB.

At a meeting of photographers held at the rooms of Mr. Brittlebank on the 1st day of October, 1879, Mr. A. L. HENDERSON in the chair,

It was proposed by Mr. CUTCHEY, seconded by Mr. MAWDSLEY, and carried unanimously—"That in the opinion of this meeting it is desirable that a Photographic Club be formed."

It was proposed by Mr. FOXLEE, seconded by Mr. COWAN—"That no one be eligible for membership unless he be a member of a photographic society."

It was proposed as an amendment by Mr. PAYNE JENNINGS, seconded by Mr. LAWRIE:—"That though advisable that the members of the Club should be members of a society, such be not imperative."

It was further proposed, as a further amendment, by Mr. BOLTON, seconded by Mr. PEARSON:—"That anyone (photographers or otherwise) be eligible to be members."

Upon a show of hands the proposition of Mr. Foxlee was carried.

It was proposed by Mr. FOXLEE, seconded by Mr. MAWDSLEY, and carried—"That a Committee be formed to carry out the preliminary arrangements, such Committee to consist of nine gentlemen, five to form a quorum."

Committee.—Messrs. Henderson, Bolton, Cowan, Payne Jennings, Brittlebank, Foxlee, Dunmore, Mawdsley, and Cutchey.

Mr. BOLTON proposed, and Mr. COWAN seconded:—"That the resolutions passed at this meeting be subject to such modification as may seem desirable by the Committee; such modification to be submitted to a General Meeting."

Talk in the Studio.

CENTRING A LENS.—For many purposes it makes little or no difference whether the axis of a lens corresponds with its geometrical centre; but for telescopes, opera glasses, photographic cameras, and other instruments of accuracy, their optical and geometrical centres must correspond. In testing lenses to ascertain if the optical centre and the geometrical centre coincide, the lens is cemented to a chuck upon one end of a hollow lathe mandrel; near the opposite end there is a ground glass surface, and in front of the lens being tested, there is another lens supported on a standard, beyond which there is a small vertical rod and a lamp. These different pieces are all in line with the axial line of the mandrel, and an image of the rod is cast upon the ground glass screen. If the image remains stationary while the lathe revolves, the optical centre of the lens coincides with the centre of rotation; but if the image moves, the optical centre is out, and the lens must be centred while the cement which supports it is still warm and soft. This is easily done by holding the hands against the

edge and sides of the lens as it revolves. When the lens is optically centred, if its periphery is out, it must be ground down. This is readily done by placing under it a piece of sheet iron bent into semicircular shape, and forced upward against the edge of the lens by means of a screw passing through a board that supports it. The sheet iron is charged with sand or emery and water, and as the lathe revolves the lens rapidly assumes a circular form.—*Scientific American.*

SODIUM HYPOSULPHITE IN ERYSIPELAS.—The recommendation of this remedy as a specific against erysipelas is a matter of periodical occurrence. The latest appears from a photographer who writes to *Anthony's Bulletin* that he has derived much benefit from it in his own person, and has personal knowledge of its value in at least fifty other cases. A saturated solution of the hyposulphite in water, of which a teaspoon to a tablespoonful taken every one or two hours is the best form in which to use it internally, while externally equal parts of the solution and glycerine should be applied by means of cotton flannel. Avoid stimulants, and eat farinaceous food only. After the doses above mentioned have been continued for twelve hours, they may be reduced to about one-third the frequency. A moderate amount of purgation does not warrant the stoppage of the remedy.

To Correspondents.

VICTORIAN AMATEUR.—There is, unfortunately, no substitute for light in photography, hence a "remedy for insufficient light" can only be found in securing more light. If, as we infer from your letter, your studio has its glass side 4 feet 6 inches from another building, it is tolerably certain that you cannot have much light of photographic value for your sitters. Such a position is comparatively useless. Have you a glass roof? Can you raise the studio about 10 feet or more, say, so as to bring it within range of more light? In any case, you can whitewash the wall which is opposite your side-light. It is possible that some of these expedients may improve matters; but it is probable that removing the studio to another and more open position will be the only effectual remedy. 2. A moment's reflection will satisfy you that we cannot with propriety recommend in these columns the goods of any particular manufacturer. There is, however, no need for this. In the early days of the collodion process, when the manufacture of collodion was but little understood, the production of certain manufacturers was often better than that of their less experienced brethren; but now you are safe with almost any of the well-known commercial samples. Of course there is difference in quality, and some operators prefer one, and some another, but all are good. 3. Your question as to the best and easiest mode of intensifying a negative is not quite so easily disposed of. As a rule, it is the practice of good workers in the present day not to intensify at all. If things are working well, and the exposure is right, it is easy, as a rule, to obtain a negative which requires no intensification, sufficient vigour being obtained with the ordinary development. If a negative requires intensifying, the best and easiest mode of effecting it must depend upon circumstances. It is necessary to enquire how much treatment it requires: whether it is over-exposed, or under exposed, or slightly fogged, or clean. Presuming it to be an ordinary negative, with no especial fault but a little want of vigour, then a very simple plan consists in adding a few drops of a 20-grain solution of nitrate of silver, and at the same time a few drops of a 20-grain solution of citric acid to the ordinary developer, and applying the mixture to the negative for a few seconds. Or the old pyro and silver method answers well. Applying a solution of sulphide of potassium will give greater intensity still. But you are doubtless familiar with the many intensifying formulae we have published in these columns and in the various YEAR-BOOKS. The best to apply depends always upon circumstances, for which no general rule can be laid down.

CAPTAIN TURTON.—We regret that we do not know to what you refer in the note handed to us by the publisher. We do not remember any allusion in the NEWS of Sept. 19th to paper negative plates. Will you kindly refer us more fully to the special reference meant?

A. W. R., Croydon.—We shall look with interest for the pictures. **A SPECIMEN OF PERMANENT PRINTING.**—The curious thing you enclose is apparently half a coloured picture. It is the colour backing to which a transparent photograph is intended to be.

SUBSCRIBER (Runcorn).—The paragraph to which you refer was, as you see, copied from a foreign journal, and so far as we know the process is not patented. But we cannot say with certainty that it is not. The only mode of ascertaining this with certainty consists on a careful search of the records at the Patent Office in Southampton Buildings.

F. GUTENST.—Many thanks, received. Some remarks shortly. Several correspondents in our next.

The Photographic News, October 10, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

AMATEUR PHOTOGRAPHY AND LANTERN TRANSPARENCIES— THE TEST OF PHOTOGRAPHIC PROFICIENCY.

Amateur Photography and Lantern Transparencies.—Those of our readers who employ the camera as a pastime and during moments of sweet leisure, should not forget one special application of their work. We mean the preparation of transparencies from their negatives for exhibition in the lantern. Many lady and gentlemen amateurs are perfectly cognisant of this charming application of their work, and we have, indeed, to thank one of their number, a tourist photographer, for a delightful entertainment at which we assisted some ten days ago, when he passed in review a series of plates taken during a holiday tour this summer. We cannot, all of us, hope to rival Mr. York in his production of lantern slides; but those who would desire to know how far perfection may be reached in this branch of photography will do well to inspect that gentleman's clever work. Mr. York goes about the matter in a systematic way, and arranges his series of photographs into "Readings," one "Reading" constituting an evening's entertainment, to make which more complete, he compiles a short descriptive lecture, that introduces the plates one after another as they appear to the audience. Our tourist friend's exhibition of which we have spoken was naturally a more modest affair, but it gave a pictorial account of his ramble with three companions through Yorkshire and the lake district. His pictures were of cabinet size, and therefore full large for the sciopicon in which they were exhibited, and the show commenced by a series of portraits—those of the pedestrians who made the tour—which were introduced with some humour. Mr. Jenkins in his walking costume, Mr. Jenkins in his state costume, Mr. Jenkins' face (enlarged), Mr. Jenkins' back (this ornamented by a huge knapsack and bent with travel), were some of the introductory sketches to the journey. Then we were treated with a group by the wayside, buckling on their knapsacks, and evidently "going to begin," after which the views commenced in good earnest. The first, we remember, was a Yorkshire lane, the massive foliage overhanging the road, in the vista, the backs of three pedestrians on the tramp. Then we get a view of Leyburn and "the Shawl;" of the waterfall at Hawes; of Kettlewell; of Richmond Hill (on which a lass once lived); of High Street, which is not a street at all, it seems, but a ridge some two thousand feet high; of Ullswater, the English Lucerne; and farther on Patterdale, Helvellyn, the Catbells near Keswick, and other spots. We do not mean to say that our friend's pictures were all perfect—far from it. But of this we are certain, that they looked much better enlarged in the lantern than they did printed upon albumenized paper. And here we may remark to our amateur readers not to be discouraged if their plates are not everything that can be wished. They will make very good transparencies nevertheless; and let us add that a photograph, whatever its merits, never looks better than when viewed as a transparency. There are frequently delicate gradations and details which are altogether invisible until the plate is viewed by transmitted light. The amusement and entertainment lantern transparencies afford, especially when taken by the exhibitor, are endless on cold dark evenings, and their inspection does not tire or fatigue, like looking into a stereoscope. As to a lantern, there have been directions given in these columns many a time; you may always make use of your photographic lens, and the rest is not very expensive. The sciopicon, with which many of our readers are familiar, is a very convenient lantern, and, provided with a double wick, gives an exceedingly bright light. We see that Browning, of the Strand, is actually manufacturing a lantern to burn with three wicks, which

is no doubt, more powerful still. As to the preparation of transparencies, that is not very difficult with aid of dry plates. The gelatine films purchased of Swan or other well known manufacturers are exceedingly convenient for the purpose, and will give a transparency by being placed face to face with the negative, and exposed to the light of an ordinary gas flame for a couple of minutes. Sometimes, it is true, the film formed by a deposit of silver is rather opaque, and the light of the lantern has a difficulty in penetrating, and for this reason we ourselves prefer to make our lantern transparencies with carbon tissue. Nothing can be more simple than the production of carbon pictures in this way upon glass. A piece of tissue is printed—we prefer a dark violet—under the negative. The printing must be vigorous, for the gelatine film is very delicate compared to silver, and, after the tissue has been soaked in cold water, it is put, face downwards, upon the glass that is to constitute the slide, and developed. By making a pencil mark upon the tissue, it is easy to fit the same properly upon the glass, but the latter should be rather larger than necessary, so that it may be cut down afterwards if the print has not been developed altogether in its proper position upon the surface. There is no need to be a carbon printer to effect the matter. Supposing you know nothing of printing upon tissue, it is only a question of wasting a few pieces in trying. When the tissue has been sensitized and dried, it is put in a pressure frame in the ordinary way; after sufficient printing (you will ascertain proper time for printing after one essay) the bit of tissue is put for a minute to soak in cold water; taken out, it is clapped, face downwards, upon the glass slide, and after pressing for five minutes under a blotting-pad, if you have not a proper squeegee, immerse the glass plate in warm water at about 90° F., and develop. When the print has been absolved from all superfluous pigment, the glass slide to which it adheres is put into cold water, and the transparency is finished. The veriest tyro will produce a good lantern slide in this way after a couple of trials, but the printing must be deep, and a suitable tint of tissue employed. The pigment sticks firm enough to the glass, but you may varnish if you like.

The Test of Photographic Proficiency.—The examinations in photography that are to be instituted in connection with the City guilds remind one that such examinations are not altogether novel. In connection with the Society of Arts, students may be examined in photography; and at the Staff College at Sandhurst, as also in certain examinations of the Civil Service—to wit, in the case of aspirants for employment in the Royal Observatory—tests are applied to gauge one's knowledge of camera work. Among staff officers a knowledge of photography is very valuable, and hence it is a subject in which many qualify, while the circumstance that various observations are now automatically registered by photography in our observatories renders it incumbent on astronomers to be conversant with the practice of the camera. But examinations in photography, to be really of value, should, we are of opinion, include a practical demonstration on the part of the student, for an examiner could scarcely certify that a man was well versed in the art of photography unless the former possessed some practical proof of the student's manipulating proficiency.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER VI.

HOWIE'S PONY AND MY FISH—RUSSET—AN ITALIAN WITH A SCOTCH ACCENT.

ENOUGH of Iceland! If I liked, I could spin it out for weeks and months; but my readers, I dare say, wish to know some of my experiences since that eventful voyage. I could tell you about wandering over that sterile country

—I could tell you how wearied we got of the uniform scenery—how Jan wakened up one morning, and discovered his dog spotted all over and lined very neatly a *la zebra*!—how he rubbed his eyes—cried, “Mein hund? Wo est mein hund?” and as the poor innocent trotted up to him at the cry, he yelled, “Ho! ho! you beast! you dare come near me when I cry on my dear Slokos—never!” And I can assure you Jan stoned the poor dog, under the impression that he was a stranger and a thief, for a week, when the silver began to wear off. I could tell you how the noble company sickened of the whole job!—how they all gathered together and steamed away for Scotland, very well disgusted with the expedition, only I would have to mention day and date, and I don’t wish to do that; it is enough for me to tell that we had to ship in a schooner for Leith—that I occupied and paid for a space, three feet square, to store dried fish—that I filled the same space with fish—that Howie, wishing to do a nice thing to his uncle the horse dealer, bought a pony and a berth for it on board the *Rose*—that we experienced some awful weather! Three times we sighted the coasts of Norway! We *should* have been on the Scottish coast within six days after leaving Reikiavik, and we were *three and twenty*! About the fourteenth day the provant that Tom had taken on board for his pony got exhausted.

“Look here, Geo’,” he cried one morning; “my pony is starving!”

“Can’t help it, Tom.”

“Oh, yes, you can.”

“How?”

“Let me have your kippered salmon? I’ll give you the same money as you gave in Iceland.”

“That isn’t fair, Tom!” I explained; “you should not speak that way. Don’t you think that I am entitled to the price I would receive for them in Scotland?”

“Case of necessity, my boy,” explained Tom. “We may never see Scotland! My pony must have food. If you don’t give, I shall take!”

“If you do, you do it without my consent; and if you touch a hair of my kippers’ heads, your blood be on *your* own head!”

However, Tom took my fish, and, what is more, his pony ate it! Dear old Tom! I could not help being angry and savage with him. I had all my selfish little plans laid: how I was to dispose of the fish, and had even (mercenary wretch that I was!) calculated the probable returns I should receive—the invitations to Sundays and Christmas dinners—a week’s board and lodging gratis in the autumn, and innumerable little tokens of love and affection in the shape of handkerchiefs, ties, &c.; and here was a brute of a horse devouring the “open sesame!”

You should have seen us during the time that the fish lasted. We would scramble on deck once or twice during the day, and while I clutched the weather side of the bulwarks, Tom would throw his arms round the gear about the mainmast, and then we would scowl at each other in the most awful manner.

However, there came an end to the fish, and shortly after there came an end to the horse. Tom tried to feed it upon old canvas and ropes’ ends, but it wouldn’t do. The change was too much from the beautiful kippers it had been used to, and so it—died! Now, don’t you think it was particularly mean in Howie to say that he believed it would have lived if it had not been for my fish?

Sick of each other’s company, and heartily sick of the sea, we at length landed at the shore of Leith; and, by heavens! I swear it is the dirtiest, filthiest shore ever I landed at! I was wrecked in the *Stanley* ss., about twelve years ago, on the “Black Middens” of North Shields, and have wandered around the Low Lights, and along the low street of that mucky hole; but I must honestly say that Leith—the shore of Leith—for outright filth, carries the palm. For muck and effluvia I’ll back it against creation.

In the spring of the following year I engaged with a

man in Newcastle. We will call him Russet. He was the type of a class that I have often met since. He laboured under the impression that every man should be his own wright, carpenter, builder—everything, in fact. The dark room had the appearance of a joiner’s shop; it was hung all round with saws and hammers; the corners of the shelves were stuck full of brown paper twists containing nails and screws. You would hardly ever find Russet without a saw or hammer in his hand. The neighbours always knew when he was at home. Had he been a spirit medium of the first water, his presence could not have been accompanied by more noises. He was stripped to his shirt and trousers when I made my appearance in his glass house, and was busy setting up a frame for a background. “How do?—how do?” he cried, as he gave me a sticky hand to shake. “Can you do anything at this? Do you like a bit of carpentering?” He seemed awfully disappointed when I replied in the negative.

“Every one should be able to drive a nail,” he ejaculated.

I quite agreed with him there, and had little doubt but that I could accomplish that feat.

He seemed to cheer up at this, nodded his head approvingly, and treated me to a homily upon the advantages of being able to do a bit of carpentering yourself.

“Look at the expense it saves!” he cried, as he wheeled round his frame and knocked a stucco image off its perch, smashing it to pieces. I don’t exaggerate this incident, for if the whole truth was told it would be found that there were two images broken on that occasion; it would likewise be found that they cost Russet seven-and-sixpence a-piece, and had he got a practical man to make the frame it would not have cost over four shillings. “But look at the expense it saves, my boy!”

After Russet had swept away the remains of the images, muttering something the while, not loud, but deep, he turned upon me abruptly, and demanded, “Do you drink?”

Now as I had just been thinking that a glass of beer would be the very thing to help a certain sinking I felt in the inward man, and at the moment I had a very vivid recollection of Ballarat and his developer, I replied modestly in the affirmative.

“Ah, my boy!” was Russet’s unexpected reply, “I have not tasted a drop of anything stronger than water these five-and-twenty years, and look at me!”

Now when you know that I was a strong, healthy man, weighing at that time some thirteen stone, and that Russet was a puny little mite that I could very nearly put in my pocket, the reader will see the absurdity of his remark.

There was a funny incident occurred while I was in Russet’s employment. You must know that the operator he had before me was an Italian. He had communicated with Russet by letter written in the purest English. He had been in Berlin, Paris, and had worked for the famous Claudet; so Russet, thinking to make him a wonderful attraction to his studio, had a few thousand circulars printed ringing his praises, and lo! when the Italian appeared on the scene, never a word of English could he speak. Some interpreters in London had written the letters. Of course there was a row, and the consequence was that the Italian was discharged, and I reigned in his stead.

“And what on earth will you do with all these circulars?” I asked Russet, after he explained the circumstances.

“You can be the Italian!” was his prompt answer. “You are as black as he was, and a little better looking.”

So, although I did not like the idea, I had to submit, and be styled Signor for the first and last time in my life.

A few weeks after I had been with Russet, I had occasion to quarrel with my landlord about some collars that had gone a-missing at the wash; and those who know me best tell me that when I lose my temper or speak

earnestly there is a very palpable Scotch accent to be detected in my tones. So thus, when I had thumped the table and spoke my mind freely—very freely—what were my feelings, do you imagine, when I heard an onlooker who had been listening to me with the utmost attention, exclaim to his comrades: "Well, he may be an Italian, but he is the first I ever heard speak broad Scotch!"

(To be continued.)

THE PRESS AND THE EXHIBITION.

[From the DAILY TELEGRAPH.]

VISITORS to the Exhibition, which is opened to-day by the Photographic Society of Great Britain, at the Gallery of the Society of Painters in Water Colours, will not fail to observe the rapid development of processes which, but a few years ago, were unheard of. Apart from its curious and instructive character, in this respect, the display, taken all round, is a decidedly good one, with many points of extraordinary merit. Instantaneous photography, by the use of gelatine plates, is chiefly exemplified by Colonel H. Stuart Wortley, Mr. Joseph Gale, Mr. S. G. Payne, and Mr. Payne Jennings. The first-named of these zealous experimentalists has contributed a remarkable collection of what are in reality sun pictures, though the effect is that of moonlight, with its reflections on cloud and wave. Breezy weather with storm-racked skies is the characteristic aspect in which this accomplished amateur has presented several coast scenes of wild Cornish beauty. "The Dogs of Scilly and their Prey" is the title of one that figures forth a wreck on the outlying rocks of Tresco or Bryher, in which dangerous locality the *Schiller* was lost between four and five years ago. There can be no misconception as to the instantaneous character of Colonel Stuart Wortley's admirable carbon prints. Every wrinkled wave is sharp and clear in its delineation; and the moment in which the spray comes dashing over the savage rocks is happily caught in more than one instance. The honest force and truth of these coast studies, which hang in the centre of the wall opposite the entrance to the gallery, will command universal admiration. Varying the carbon process on which Colonel Stuart Wortley relies for his effects and for their durability, and substituting for his colouring matter smalt or some other enamel pigment, capable of being fused on porcelain, the Autotype Company makes a prominent display, at the upper end of the room, with a number of earthenware or china plaques, on which the photographs have been burnt in. Though not absolutely new, this kind of work is a long way in advance of what has ever been done before, and the size of the enamels has completely taken by surprise the most experienced photographers. It must, however, be confessed that largeness of portraiture, on some of these porcelain grounds, has been attained at a certain sacrifice of refinement and tone. Let them be compared with the truly excellent printing in platinotype, by Messrs. W. Cobb and Son, from the negatives of various hands, and it will be seen where the enamel photographs fall away in soundness and delicacy. Still, as a promise of finer work to come, these pictures are well worthy the attention which their very appearance will ensure for them. The large centre picture of Stoke Pogis Church, the scene, as is generally supposed, of Grey's "Elegy," which piece of landscape photography is exhibited at the opposite end of the room, having been printed and enlarged from a negative by Mr. Vernon Heath, is another of the noteworthy specimens from the laboratory of the Autotype Company. Rivalling it in quality, as well as in size, are two enlargements by the Woodbury Company, from negatives taken by Captain C. H. Verney, in the picturesque neighbourhood of Pain's Hill, Cobham. Portraiture is abundantly represented, pleasing subjects and skilful manipulation sufficing to attract where popular interest is wanting. There are, however, more than two or three heads recognizable as the likenesses of notable persons. The Woodbury Company's enlargement, from a photograph by Messrs. Lock and Whitfield, of Professor Huxley, is one of these, if not, in fact, the chief. Then there is an exceedingly beautiful series of autotypes, in a pinkish red tint, similar to that of the most dainty of Bartolozzi's engravings, the subjects being the young Princesses Victoria, Maud, and Louise of Wales. They will be found at the lower end of the room, under the large picture of Stoke Pogis Church. Signor A. Lombardi exhibits six or seven noteworthy pieces of portraiture, in his best style of finish. Two of these pictures are likenesses of Lady

Gilford, differently posed, but confirming one another in close fidelity to the original. A likeness of Mrs. H. V. Macdonald is another of the Lombardi series; and a strikingly good portrait of Mr. Biddulph is a fourth. Best of all the Italian photographer's portraits, however, is the vivid and thoroughly characteristic head of Mr. Charles Reade. M. Boucher, of the King's Road, Brighton, exhibits a half-dozen of spirited portraits, direct from life, and artistically endowed, in some instances, with a pictorial character. They are grouped in one large frame, and, thus displayed, they conspicuously adorn the right-hand corner of the lower end of the gallery. The subjects are "The Aga's Favourite," "From Erin's Green Isle," "Resting," two portraits of ladies, and one of Major-General Cameron Shute, C.B., M.P., which is distinguished by life-like expression as well as exactness of feature. A single contribution by Mr. T. G. Hemery is a telling portrait of Mr. Glaisher, taken with a platinum base on Whatman's drawing-paper. Heads of Professor Rainy and Mr. Lawrence Hill, both such subjects as Mr. Oulless—who, by-the-bye, is one of the judges of the Exhibition—would delight in painting, are shown by Messrs. Thomas and Robert Annan: Enamel photography, as applied to portraiture, is well represented in Messrs. Cobb's likeness of the lamented Prince Imperial, and Mr. H. N. White's portrait of the late Mr. Samuel Phelps. Animal painting has a handmaid in photography, as is sufficiently shown by Mr. T. J. Dixon's "Studies of Lion and Lioness," Mr. F. York's carnivora, from the Zoological Gardens, and the instantaneous pictures, by Mr. W. Wainwright, jun., of cows and pigs. The animal forms, also, in those beautifully perfect landscapes by Mr. S. G. Payne, are conclusive evidence that the work is instantaneous. Of this difficult operation, the extremely delicate sea pieces, "Brixham Trawlers," and the various landscapes and views on the Mole, with which Mr. Joseph Gale has ornamented the wall where the numbers corresponding with those in the catalogue commence, are highly meritorious examples. So, likewise, are the patiently-watched moments of natural study, embodied in the English and Irish scenery which Mr. Payne Jennings could only have caught in transient passages of light and atmosphere. When we come to pictorial photography, of the class which involves artificial arrangement, we find, as usual, much that mars perfection. A long practice in this department has taught Mr. Robinson the value of simplicity; and his attempt at *chiar'oscuro*, "Between the Lights," is, perhaps, as successful as any picture of the Josef Israel kind ever essayed by photographic means. But no painter would have been satisfied to allow such accidents as the excess of light on the girl's apron, for instance, to remain. Some rather attractive examples of pictorial treatment come from Chicago, the artist being Mr. H. Rocher; but, despite the eulogy lavished on them, they are certainly disfigured by a blackness which seems to be the result of too long an exposure. After all, there is nothing of the *tableau* kind in this gallery which will for a moment compare with two little works that are very likely to escape notice altogether; though, as examples of printing from combined negatives, they are simply marvellous, and are, in all respects, perfect pictures of the Meissonier type. One is "Henry Kirke White in his Study," and the other "Washing Day," the artist of both being Mr. A. Diston. Scarcely within the category are the four prints which the Autotype Company has exhibited as specimens of Mr. R. Elmore's new work, "Liber Nature," these having been painted by the artist in monochrome, expressly for reproduction, as are the drawings, "Homer" and "Shakspeare," by Mr. F. Madox Brown. Among the special attractions of the gallery are the views taken during the Anglo-Dutch Arctic Expedition of 1873, by Mr. W. J. Grant, a Devonshire gentleman who has made the photography of Polar exploration his favourite study; and the Russian photographs of Brandel and others exhibited by Leon Warnerke of interiors at Warsaw and of scenes in Armenia. The last-named contributor has supplied a number of valuable studies, by Nikitin, of Armenian life and incidents of the Russo-Turkish campaign.

[From the DAILY NEWS.]

THE annual exhibition arranged by the Photographic Society of Great Britain was opened on Saturday, at the Gallery of the Society of Painters in Water Colours, 5A, Pall Mall East. Photography being at present in a transition state, it was for some time feared that the exhibition, in point of size at least, would fall short of its immediate predecessors. This fear has, however, been agreeably disappointed, 404 specimens having been sent in by 93 contributors, of whom 35 are members of the

Society. For two or three years experiments have been going on with the object of substituting gelatine plates for collodion, and thus taking likenesses instantly instead of spending perhaps thirty seconds on the operation. A gentleman named Charles Bennett has at length perfected the new process, saying that a little difficulty in its management is still felt. By using gelatine plates a photograph can during summer be taken in a sixth part, and during winter in a twentieth part, of the time required for collodion; and the art may therefore be said to have passed into a stage in which the possibilities of fixing in black and white the fleeting expressions and positions of man and nature are boundless. The many whose features assume a sullen or meaningless look under the influence of a camera, the parents whose babies refuse to be still when awake, and the photographer who loves to see his pictures instinct with the forms of flying birds, the ripples on the water, and the scudding clouds, will all welcome the new improvement. It could hardly be expected that in the short time which has been available for practising with the gelatine plates a large number of first-class pictures could have been taken by means of them; but some of the specimens exhibited in the Gallery in Pall Mall are really beautiful. In the "Sycamores on the Wharf," by Mr. Payne Jennings, of West Dulwich, for instance, not only is every leaf and its shadow in the water distinct, without spoiling the general effect, but the very atmosphere of a balmy day seems to breathe through the picture. But the quickness with which the gelatine plates act is better shown in a small landscape contributed by Mr. J. Gale, of Bermondsey, and described with the appropriate lines:

The swallow, too, is come at last.
I saw her dash with rapid wing,
And hailed her as she passed.

Over a pool in the foreground a solitary swallow was flying when the landscape was photographed, and the image of the bird and its shadow just beneath have both been secured without the slightest blurr or faintness to show that they were swiftly moving when the likeness was taken. The exhibition is also noteworthy as embracing the results of another important improvement, which, after being the subject of much thought and labour for several years, has lately been perfected by Mr. W. Willis, Junr., of Lee. This gentleman has patented a process of photographic printing in what he calls platinotype, the print being produced by means of platinum instead of gold and silver. Hitherto the photograph has been a thing of beauty, but not a joy for ever; whereas, when Mr. Willis's invention is used, it may be both. It is true that permanency was secured by the carbon process, but against carbon paper there is the great objection that while printing it is almost impossible to see the picture on it. The platinotype prints in the present exhibition are a trifle cold in tone, but they give a great variety of lights and shadows, and have the advantage of being printed on paper which does not shine. Among the other interesting things in the Gallery are some striking effects of sky and sea photographed by Colonel Stuart Wortley, four photographs of the famous Burnham Beeches by Mr. V. Heath (Piccadilly), and a number of photographs burnt on porcelain by the Autotype Company. The opening of the exhibition was celebrated on Saturday night with a soiree, at which there was a good attendance, including the President (Mr. J. Glashier), the Treasurer (Mr. J. Spiller), the Hon. Secretary (Lieut. L. Darwin, R.E.), and the Assistant-Secretary (Mr. E. Cocking). There were no formal proceedings, the evening being devoted to conversation and the inspection of the collection. The latter will remain open till the end of November, free admission being granted to the public.

[From the MORNING ADVERTISER.]

THERE was a large and distinguished assemblage of ladies and gentlemen at the *conversazione* of the Photographic Society of Great Britain on Saturday evening, when the annual exhibition was inaugurated at the Gallery of the Society of Painters in Water Colours, 5A, Pall Mall East. Like the agriculturist, the photographer has had to contend against the difficulties inseparable from an unfavourable season. Light is essential to the production of high-class work, and considering how seldom the sun has deigned to shine it is surprising that so many really favourable results have been attained as this exhibition evidences. With what extra trouble and annoyance the earnest photographer has been beset in the exercise of his seductive

calling there is here nothing to show. Results which are unmistakably satisfactory have been accomplished, but under what trying and vexatious circumstances the artist alone, were he so minded, could divulge. However, it is not with the means and practice of sun-painting that we are concerned. The finished performances of the camera, as they are displayed in this Society's annual exhibitions, carry our minds away from the manipulative processes of scientific chemistry. Those more immediately interested in this beautiful art will doubtless view these works primarily in relation to the methods by which they have been produced, and, next, to the finished result; and such a proceeding, intelligently carried out, cannot fail to be highly interesting and instructive. In fact, much as the connoisseur and lover of the beautiful in nature and art may admire and learn from these exhibitions, it may fairly be questioned whether the photographer himself, being invited, as it were, to a banquet prepared by the most accomplished *chefs* in his or their speciality, does not derive an equal advantage from having his ideas expanded, his knowledge increased, and from being stimulated and encouraged to persevere in his vocation. This alone would be an all-sufficient *raison d'être* for these annual exhibitions. It is, however, in the spirit of an out-sider, as a looker-on at some mystic art, which, greatly as we may appreciate its beauties and feel embarrassed at its wonders, we do not profess to understand, that we offer a few comments on the specimens exhibited, from a purely artistic standpoint. In portraiture no appreciable advance seems to have been made. The triumphs of former years have come to be matters of course, such a thing as retrogression in photography being contrary alike to expectation and experience. If progress has been accomplished it is rather in processes of development than in ultimate results. No doubt the initiated will attach importance to those works produced by the gelatine plate as a substitute for the wet or collodion process. The advantage claimed for the former, being essentially manipulative, is not apparent to the mere observer, and no steps have been taken in this exhibition to demonstrate it. If the photographer had exhibited side by side a picture by each process taken under exactly similar conditions it would have been possible to compare results. It may, however, be pretty safely affirmed that the successful use of the gelatine plate, hitherto regarded rather as a possibility of the future, has become an accomplished fact, and is already having its influence on the development of the art. The two subject pictures executed by Mr. H. Garrett Cocking, son of the esteemed assistant-secretary, representing "The Fern Seller" (230), and "A Drink by the Way" (231), are by the gelatine process, and show that at least this clever manipulator has made good use of this simple material. These are both good specimens, and although Mr. Cocking has previously himself an expert in photography as applied to grouping and expression, it is clear that he has opened up a new field of research which cannot fail to add to his well-won reputation. Mr. Debonhau's two frames of portraits of children (105 and 127) are highly commendable; while, perhaps, the portraits direct from life by Mr. A. Boucher, of Brighton, are the most charming examples in the collection. They have, however, been to some extent after-touched, and, although they rank high as finished performances, cannot be regarded as the simple unaided product of the camera. The carte and cabinet portraits of children by the collodion process, shown by Mr. W. J. Byrne, are really exquisite. A series of full-length costume portraits, by Mr. H. Roher, of Chicago, have merits of their own, but are a trifle too black in tone. Messrs. E. Gregson and Sons, Blackpool, exhibit three frames of portraits which are remarkably good specimens, the tinting being almost perfect alike in its most delicate and more pronounced passages. There are several portraits by the luxograph process, taken without the aid of daylight, as well as others exhibited by Mr. H. Vander Weyde, taken by the electric light, in which the shadows are so skilfully modified that they compare favourably with pictures produced by natural light. Mr. Robert Faulkner and Messrs. Hills and Saunders contribute some fine specimens produced by the powder carbon process on opal. Amongst the novelties may be mentioned the works printed in platinotype by the inventor, Mr. W. Willis, Junr. These are printed from negatives supplied by Mr. Payne Jennings, Mr. Valentine Blanchard, Professor Stebbing, and Mr. F. Hollyer, and in each case the result is eminently satisfactory. The pictures are in tone a pure grey, charmingly soft, and altogether free from blots or blurs. By this process, which substitutes platinum for gold or silver, absolute permanence is

secured, and that oft-repeated reproach that photography is apt to fade is put out of court. Mr. R. Faulkner's autotype prints, in imitation of the old Bartolozzi mode of engraving and printing in a style resembling red chalk, are unquestionably beautiful, the three "Studies of Expression" (114) being exquisite, both in point of arrangement and execution. Amongst the landscape studies those by Mr. Payne Jennings still hold a foremost place. His pictures are produced both by the wet and gelatine processes, and are marvellous examples of pure photography. Colonel H. Stuart Wortley exhibits, as usual, several effects of sky and sea taken instantaneously. Even the feathery spray dashing over rocks in Scilly is caught with the happiest precision, as if Nature had been wooed into a focus, and then and there impounded. The utility of these graphic records of material Nature in her most evanescent moods is obvious. Unerring in point of literal truth, they bring home to the mind in all their vividness the pleasing realities which they transcribe. True, they are without the embellishment which colour affords, and it may be objected that the ozone is not there; but short of these impossibilities the forms of sea and sky, ever shifting like the kaleidoscope, are so accurately represented that the imagination experiences no difficulty in realising their fidelity and enjoying the breeze which sure enough drives those clouds and waves onwards. Messrs. Wratteu and Wainwright contribute a series of small but effective instantaneous views of the last University Boat Race. There are excellent views in Devonshire and North Wales by Mr. William Bedford; views in Skye by Messrs. Valentine and Sons; and sundry familiar picturesque "bits" in South Wales by the School of Military Engineering, Chatham. Mr. W. J. Grant contributes a considerable number of studies taken by him during the Dutch Arctic Expedition, 1878, which are not only favourable specimens of the art, but exceedingly interesting. On one of the screens Mr. Edwin Cocking exhibits a series of views in Demerara, a visit to the falls of Kaieteur, taken by Mr. F. G. Norton, a former pupil of his, and immediately below will be found a large number of Indian views by Mr. A. T. W. Fenn. Mr. T. J. Dixon's "Studies of Lion and Lioness" (111), carbon enlargement, are exceedingly lifelike. The Autotype Company and the Woodbury Company are represented by good examples of their negative and carbon enlargements. The enamel photographs—consisting of portraits, landscape, and architecture—burnt in upon porcelain and earthenware, exhibited by the Autotype Company, resemble sepia drawings, and seem to open up an entirely new field of enterprise. There are also commendable specimens by Mr. Matthew Whiting, Captain Verney, Mr. A. Donald, Mr. S. G. Payne, Mr. A. Lombardi, and Mr. Alfred S. Fisk, whose instantaneous studies of horses, dogs, sheep, pigs, &c., are worthy of all praise. As in former years, the Council have placed at the disposal of the judges a number of medals to be awarded for artistic or scientific excellence. The judges this year are Mr. H. S. Marks, R.A., Mr. W. W. Oules, A.R.A. (painters), Mr. James Glaisher, F.R.S. (the president), Mr. Valentine Blanchard and Mr. John Spiller (members of the Council), and Mr. T. M. Brownrigg and Mr. G. Shadbolt (members of the Society). The exhibition, which, as we have said, was inaugurated by a distinguished company on Saturday evening, will remain open until the 13th of November.

[From the TIMES].

THE exhibition of the works of photographers arranged at the Gallery of the Water Colour Society in Pall Mall shows in the more than 400 examples contributed by nearly 100 photographers how widely the art is practised, and to what a point of perfection it has been brought so far as manipulation is concerned. It is in this direction, however, we notice that the art which has been so completely born of science seems to conquer new ground, and not in the way of artistic feeling and those points of beauty which the painter sets himself to study and portray. Yet it has been shown by such work of the lens, guided by artistic feeling and taste, as those remarkable portraits produced by the late Mrs. Cameron, that the capabilities of photography are much higher in the hands of an artist than in those of an operator. Certainly the prime value of the photograph in an art point of view is its true representation of light and shade, and the nice gradations which give perfect form with the charm of tone and effect. Applied to portraiture with all this resource, as it rarely

is, we should expect to see a much more satisfactory development than is to be observed generally in the vast host of likenesses which crowd the shop windows. Judging from the great nicety of gradation and tone shown in many of the portraits and other specimens exhibited here, we should say that much of the beauty which the genius of Rembrandt gave to his portraits lies within the reach of an artistic photographer. The subtleties of life and expression are reserved for the painter's and the sketcher's hand alone, perhaps, but who shall say that these are impossible to the photographer who has added the something beyond his perfect lens and his instantaneous sensitive surface? If the tones and expression of a voice can be transmuted into matter and reproduced precisely, photography has yet to find its Edison. The perfecting of the instantaneous method, which has recently made an important advance in the use of a film of sensitized gelatine instead of collodion, will no doubt lead to the production of better portraits. The employment of platinum instead of gold and silver, as invented by Mr. Willis, has evidently great advantages in obtaining pure gradations, and the tone being gray, like that of a lead pencil drawing with a dead surface which artists call "matt," gives a picture more agreeable to the eye, with an airiness of effect much more natural than the ordinary tint we are accustomed to in photographs. There are several excellent specimens of this process in the Exhibition contributed by Mr. Willis (Nos. 341 to 352), and others (333, 339), by Messrs. Cobb. We noticed also some well-chosen landscape subjects, by Dr. Huggins, which have been developed a month after having been taken on the dry plate. As we are informed, there seems to be no limit to the duration of the impression once received, and the print is said to remain permanent, or, at any rate, far more so than by the gold and silver process. As good examples of instantaneous photography, there are several very beautiful skies and skies by Colonel Stuart Wortley, who maintains his position at the head of all in this difficult branch of the art, which he was, we believe, the first to discover. Mr. A. Clout's views of a regatta at Sandown, showing the yachts at an exciting turn in the race, and numerous figures on the beach, are also remarkably successful in catching the rapidly-changing scene. In landscape there is nothing in the Exhibition which carries photography higher than it has been for some years past in the hands of such experts as Mr. Vernon Heath, Mr. Bedford, Mr. Frith, and several others whose works are well known. It may be said, however, that in this direction the difficulties appear to be almost insurmountable, though here, as in portraiture, much is obviously to be attained by the study of pictorial beauty in preference to objective detail and exact reproduction. Some of the most interesting of the photographs as showing artistic feeling are the albums containing various rustic interiors, rustic figures, sheep-shearing; groups of objects, especially one of mushrooms, taken by Mr. Frederick Hollyer by the platinotype process. The great value of photography has, of course, long been recognized and systematically adopted for military and all expeditionary purposes of exploration, and of this there are many good examples in those contributed by Lieutenant Darwin, R.E., and the School of Military Engineering, though none precisely of a military nature, which is to be regretted, as these would have a special interest. Good photographs of Pearson's defences at Ekowe, and of the ordinary lager of the troops on the march in Zululand, or, better still, the biscuit-tin and mealie-bag barricades of Rorke's Drift, would be regarded with the deepest interest. These no doubt have been taken and are preserved in the School at Chatham. We have, however, some highly interesting views of the positions of the Dutch Arctic Expedition of last year, taken by Mr. W. J. Grant, of Liverpool, by the collodio-bromide dry plate process. Those also of incidents of the war in Armenia, taken by Nikilin, of Tiflis, are remarkable for characteristic selection and a nice pictorial tone with very perfect representation of the figures and places. As to the portraits, it would be difficult to pronounce which are the best where so many seem to meet the practical requisite of a good likeness, and when, as in some cases, the work of an artist has been employed in touching out the defects of accident or the deficiencies of the photographic process. Those taken on dry plates (295) seem to be excellent, and those taken by the electric light are if anything more delicate in the gradations than the ordinary daylight portraits, and it may be a question whether this may not prove to be the preferable mode. The exhibition will remain open for some weeks, and in November the medals will be presented to the successful competitors in the present exhibition.

The Photographic News.

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THE PHOTOGRAPHIC EXHIBITION.

THE annual Exhibition of photographs held by the Photographic Society of Great Britain was opened on Saturday evening last, the 4th inst., in the Gallery of the Water Colour Society, Pall Mall East. The opening was inaugurated by a *conversazione* of the members and their friends, who gathered in large numbers to see the new pictures. A more numerous and happy-looking assembly we have rarely seen within those walls.

The Exhibition is a very good one, in many respects more interesting than usual. In many respects it is different in character to most previous Exhibitions. There are fewer large frames of portraits, fewer large landscapes, and fewer enlargements; but there is a more varied collection of photographic pictures in which the art element is prominent. It is probable that the programme of prizes offered has had something to do with producing this characteristic. When prizes are offered for good things without defining by a hard and-fast line the precise style, good things of any style and size suited to the metier, the taste, or the opportunities of the artist will be produced. Whereas if the medals were offered for sets of portraits or landscapes of a specific size, the Exhibition would probably teem with frames of portraits and landscapes. It is true we miss many old and always admired contributors. We find nothing from Valentine Blanchard or Robert Slingsby in portrait studies, nor from Mayall, Chaffin, Warwick Brooks, J. M. Young, Ford Smith, Nesbitt, nor A. Wilson, whose portraits and figure studies have adorned many former exhibitions. In landscape, we miss the familiar gems of Henry Cooper, Wm. England, Bool Brothers, H. Baden Pritchard, Reuben Mitchell, Wm. Brooks, R. Viles, B. Wyles, and many others. But *en revanche*, we have the return of some old exhibitors, whose works had been missing from recent exhibitions. We are glad to hail the return of H. P. Robinsou, with his grand example of chiaroscuro; of Adam Diston, of Fyfe, with some charming work; of George Bruce, of Dunse, with rare pictorial work; of Joseph Gale, with some of the gems of the Exhibition; of Mr. and Mrs. Glen Payne, whose works could be ill spared. These, and some new contributors, pretty well supply the regretted vacancies.

We do not, on a first glance round the walls, enter into any detailed criticism or systematic mention of the contributions, but briefly mention a few of the things which first arrest attention; and in doing this we give *place aux étrangers*. The Exhibition is enriched this year by an extensive series of contributions by Mr. H. Rocher, of Chicago. We have had occasion before to speak of the high quality of Mr. Rocher's portraiture, when reviewing some examples he was good enough to send us some time ago. Good as his work then was, he has progressed since considerably, and it is not too much to say that his work in its entirety will compare favourably with the majority of the best on this side the Atlantic. His specimens range from the "pauel" or "promenade" style to large pictures

of sixteen by twelve inches. Lewitzky sends from St. Petersburg a charming cabinet portrait of himself, and M. Scamoni, from the same city, a fine specimen of "helio-gravure." Signor Bossetti sends from Italy some interesting Italian views; and these constitute the whole of the foreign contributions.

Notable amongst home contributions, a feature of striking interest is found in the large display of ceramic photographs sent by the Autotype Company. These are unlike anything hitherto exhibited in photo-ceramics: they are of a sepia tint, and produced, apparently, on porcelain plaques. Unlike those produced by what is known as the conversion process, in which a silver image is converted into platinum, iridium, or other noble metal, and then fired in the muffle; and unlike those in which a vitreous powder is dusted on an adhesive image, these are produced by means of a tissue containing a vitreous substance in place of the ordinary pigment used in carbon printing. The tissue process of producing enamels was first suggested in our volumes soon after Mr. Swan described his process of carbon printing. A Mr. Firling, of Dorchester, was the first, so far as we know, to work out the process, not, however, very successfully, and he kept the details of his method secret. The Autotype Company now for the first time appear to have worked the matter out with real success, and on a commercial scale. Mr. Robinson sends only one picture this year. Unambitious and unpretentious, it is, however, a great triumph in securing painting-like effects by means of photography. It is entitled "Between the Lights," and represents a cottage interior where, as evening comes on, and a little girl sits reading, firelight contests with the weakened light of day, and the little student is uncertain upon which to rely. It is a marvellously fine piece of chiaroscuro. Mr. W. J. A. Grant's frames of Arctic pictures are a surprise to everybody. They were produced whilst with the Dutch Arctic Expedition he recently described in our pages. Pre-eminently interesting, by reason of their subject, as these pictures must always be, we have not been prepared by former experiments for triumphs of photographic or artistic skill. Mr. Grant has, however, not only produced some interesting records of Arctic effects, he has given us really good and artistic pictures. Amongst the most striking objects in the Exhibition are Mr. T. J. Dixon's studies of Lion and Lioness, which are marvellously grand, and compel regret that they were not in existence when Sir Edwin Landseer was modelling his Trafalgar lions. A pair of portraits at the upper end of the room, one of a lady, the other of a boy, exhibited by Messrs. Hills and Saunders, will arrest attention, and compel admiration. They are carbon prints on opal, enlargements from gelatine negatives, and of charming excellence. The boy is especially fine: the admirable pose of the full-length figure, the simplicity and perfection of the composition and background arrangement, are beyond praise. The most striking frame of portraits is a very fine collection of large portraits by M. Boucher, of Brighton, rich, vigorous, and delicate, admirably modelled, and unusually free, for such portraits, from retouch.

The value of artificial light for photography is well illustrated by fine specimens produced by the Luxograph, and by other excellent work by the electric light, as used by Mr. Vander Weyde. Genre photography is well represented by Adam Diston, whose picture from a combined negative, entitled, "Henry Kirk White in his Study," is a rare gem. Mr. G. Bruce has some excellent genre studies, printed in collodio-chloride of silver. His "Farrier's Shop" is perfect. Mr. Gillard sends some very excellent studies in a similar line.

As might have been anticipated, gelatine emulsion is well represented, especially in rapid work. Col. Stuart Wortley's studies of sea and sky, chiefly by the gelatine process, are amongst the finest in this kind which have ever been produced. Two little studies of "Brixham Trawlers," by Mr. Joseph Gale, are simply delicious. A series of scenes representing English country life in the

field, such as "Thrashing and Thatching," "Carrying and Gleaning," the "First of September," and many more by Mr. S. Glen Payne, are marvellous for instantaneity, as proved by the presence of scores of moving figures; but they are more than this—they are fine pictures: they are fine landscapes, full of happily grouped figures. Mrs. S. Glen Payne's groups of flowers are as delightful as ever, and her group of game, "Fish and Moor Hens," is almost too tempting.

We must conclude our first glance, however, and shall commence a systematic notice in our next.

THE PRIZES.

Medals have been awarded by the jury to the following exhibitors:—Mr. S. Glen Payne, Mrs. S. Glen, Mr. Roher, Mr. J. Gale, Mr. Adam Diston, Messrs. Hill and Saunders, Mr. Dixon, Colonel S. Wortley, Mr. W. Bedford, Messrs. Russell and Co., Mr. Faulkner, and Mr. Cobb. In our next we shall give details of the pictures securing the awards, and also a list of honourable mentions.

STRETCHING OF GELATINE NEGATIVES.

THE enormous boon in convenience and rapidity conferred on the portraitist by the gelatine emulsion plates is doomed, it appears, not to be given without qualification or drawback. Like the tricky spirits of Elfin land, of whom Puck is a type, the negatives at times assume strange transformations. A correspondent describes, on another page, one of these strange vagaries, in which, having taken a pair of carte negatives of a child, he is astounded to find, when he returns to the dark room, a pair of cabinet negatives. The film had spontaneously stretched or expanded to nearly double its original superficies. Strangely enough, and very fortunately, it had thus expanded in even proportion, and as the carte negatives were intended for enlargement, no harm was done by the expansion, the film not even suffering the fate of the frog in the fable.

But this illustration shows a possibility which is somewhat startling. Cases might occur when the change of size might be very inconvenient, and, worse still, and not improbable, cases might occur in which the expansion was irregular, instead of even and in due proportion. In the present Exhibition there is an illustration on the table, exhibited, we believe, by Mr. Fry, of an expanded and distorted gelatine negative, the sitter being made to pull a long face very literally. We do not know the precise history of this negative, but we recently inspected a somewhat similar, or even more grotesque, monstrosity. It was the portrait of a lady whose face was distorted to something like twice its natural length. The gelatine negative, when first produced, was perfect, but the photographer, somewhat in haste to complete his work, had thought it safe, when the negative was surface dry, to hasten perfect desiccation by holding it before the fire. As soon as the gelatine—still containing a little water—felt the heat, it began to expand and stretch itself on the plate, producing no direct rupture or apparent injury, but gently and evenly stretching in the direction in which it was held, slipping, in fact, down the plate, with a result which can easily be imagined. The photographer in whose hands it occurred showed it to us as a simple plan of producing photographic grotesques, as it was manifest the direction of expansion was, at least to some extent, under control.

We can readily conceive that some of our conservative readers may regard these facts as signing the death warrant of gelatine for portraiture. The conclusion is, however, by no means necessary. The possibility of accident by no means demonstrates its necessity. It simply points to the need of extra care in avoiding it, and its causes. There exists, we have been told, at the present time, in the cellars of the National Gallery, an interesting picture by a great modern painter, who was distinguished by his passion for experiment with varied mediums to supersede "honest liuseed oil." In using one of these mediums, containing wax, he painted the face with a larger proportion than

usual, and the picture subsequently, hanging in its place on the walls of the Gallery, chanced to receive unusual warmth from the sun. The waxy medium softened, and the eye of one of the figures slipped from its place, sliding to the bottom of the cheek. It is said that the picture now stands upside down, in hope that the eye may slip back again! We do not vouch for the truth of the story; but we have heard it narrated. No one would, we apprehend, deduce from the story a moral antagonistic to oil painting. The moral would be simply to the effect that care must be used as to the medium to be employed. So with gelatine negatives: the moral of the vagaries described is the need of care in keeping damp gelatine films far from the fire, and the desirability of avoiding leaving such films soaking in water longer than necessary; also the importance of an early use of the alum bath.

FRENCH CORRESPONDENCE.

PHOTOGRAPHIC PRINTING BY MEANS OF A REAGENT ACTING ON SPECIALLY PREPARED PAPER—PHOSPHORESCENT PHOTOGRAPHS—FLUID FOR ENGRAVING ON GLASS—PHOTOPHONOGRAPH—NEW WORK ON PHOTOGRAPHY FOR ARTISTS AND TOURISTS.

Another Method of Obtaining Photographic Prints by Means of the Papyrograph.—If my readers will be good enough to refer to my last letter, in the PHOTOGRAPHIC NEWS of the 26th September, they will see that I spoke of a method of applying the papyrograph for obtaining a photographic print. This I proposed to effect without the use of the roller, but merely by means of pressure from a permanent supply of ink capable of penetrating through the pores of a paper of which all the parts not affecting the drawing to be printed remained coated with an impervious reserve. Here we are able to recognize the idea of an easy and rapid printing process. But there may be another method of applying the papyrograph in photography, and such an one has been suggested to me on reading the letter which that distinguished *savant*, Dr. Vogel, has published in the *Bulletin Belge*. He refers to a new—but, as yet, secret—process invented by Herr Kolk, an engineer in Berlin, for taking prints, not by means of a fatty ink, but by some reducing substance acting on a paper which, according to Dr. Vogel, is evidently impregnated with ferrocyanide of potassium and chloride of iron. The reducing substance produces on the paper an image in Prussian blue. In fact, it is a process for obtaining a picture by chemical action combined with mechanical impression, and the subject generally is full of interest; for suppose the spongy pad of the papyrograph to receive a charge of a solution of some reducing agent in water—pyrogallie acid, for instance—and that the paper has been impregnated with the substances above mentioned, the reducing substance will act through the porous parts at each impression, and produce an image on the paper prepared with ferrocyanide. The action will be similar to that which takes place in the printing and dyeing of woven fabrics without the intervention of photography. I do not suppose that this is the actual way in which Herr Kolk pulls his prints, but I mention it because I see that it is a method by which the required result might be obtained.

Phosphorescent Photographs.—At the Exhibition of "Scientific Objects Applied to Industry," which still remains open at the *Palais de l'Industrie*, in Paris, I lately observed some photographs which are called phosphorescent. It is an error to call them so, because, in fact, it is the background on which they rest that is phosphorescent, the image standing out in black from this phosphorescent background. But there would be an easy means of producing the reverse effect, and that is of obtaining a luminous map on a dark background. To do this it would be only necessary to take powdered sulphide of strontium, and to use it in the same way as are the metallic oxides in the production of enamels. A photograph could be taken on a deliquescent film, then the image would be hygroscopic

to an extent proportional to the intensity of the light which acted on it, and having developed this latent image by sprinkling on it finely-powdered strontium sulphide, it could be transferred to a dark-coloured paper. This paper, after being exposed for some time to a strong light, and then hung up in the dark, would show a luminous image with a beautiful phosphorescence of a light blue colour. To get the proper powder for this process, a thin layer of a mixture of 33 grammes of strontium carbonate with 100 grammes of fine sulphur must be calcined in a large crucible. If it be possible to produce these effects of phosphorescence by means of photography (and I mean to experiment in this direction), the spiritualists would be able to devise many ingenious tricks. Let us suppose a sitter having his portrait taken by the electric light, and that the latter is, after a time, suddenly extinguished; the model, being in the dark, will produce no effect on the plate; but if a phosphorescent image is made to appear in the required spot, a copy of it could be impressed on the negative. I make a present of this idea to those whom it may concern; probably it is not of much value, but a joke may be occasionally allowed as a sort of protest against the monotony of photography pushed to extremes.*

Fluid for Etching on Glass.—At the same Exhibition, where there is quite a crowd of ingenious inventions, I observed a new kind of ink (the invention of M. L. Kessler) for etching on glass, which, I think, will be found useful to photographers in many respects. In what way it can render such service it is not necessary to particularize, as the instances where it can do so are very numerous. By means of this fluid—which is not dangerous to handle, like hydrofluoric acid—and with an ordinary pen, writings and drawings may be executed on glass, and scales can be graduated; every spot that the fluid touches is found to be etched to a considerable depth. After having written or traced a drawing on the glass, all that is necessary is to wipe the surface with a sponge dipped in water. I am not able to say what is the composition of the fluid, but I am told that it consisted of ammonium fluoride. The results obtained by the use of the fluid are certainly very remarkable, and for the benefit of those of my readers who wish to try it or to examine it, I give the address of the shop where it may be purchased in Paris—M. A. Loiseau Fils, 29, Rue Richelieu. No doubt an agent for the sale of the fluid lives also in London, but I do not know where he is to be found. The price of a small gutta-percha bottle of the fluid is one franc. I purpose going in detail through the whole of the Exhibition at the *Palais de l'Industrie*, which has been made much more complete and interesting than I ever thought it would be, and if I find any novelty worthy of the notice of my esteemed readers, I shall have real pleasure in making it known. My task in this respect will be rendered easier from the fact that I have been nominated to the scientific commission specially appointed to draw up a report on all the objects which, from a purely scientific point of view, are deserving of mention.

Photo-Phonography.—Thus, a large number of phonographs of all kinds are shown in the Exhibition. Now, as both by taste and profession, I am accustomed to refer everything to a photographic standard, the idea struck me whether it would not be possible to apply photography to the phonograph. The question is whether we could, after having traced on a sheet of tinfoil the series of vibrations which constitute either a sentence or a tune, reduce to a plane surface the whole of the prints, which are more or less deeply stamped in the tinfoil, and which correspond to the more or less numerous and vigorous vibrations. This sheet of foil can be made, as is well known, afterwards to reproduce the words that are impressed on it, only by keeping it free from any kind of pressure. Besides, these fillets, such as they are, could only be used

again by employing a phonograph moving in a straight line instead of one supplied with cylindrical fillets, on which the vibrations are impressed in a special curve. But to one of these fillets, impressed in a straight line, a mould could be applied by a method similar to that of the Woodbury process, from which a print could be obtained with the points no longer more or less stamped in, but with those points more or less sunk, according as they correspond to the depressions more or less deep. Thus we should translate the differential effect from a curved to a plane surface. By means of photography we could then reproduce these fillets, which must be of a certain initial length in order to reduce them, preserving at the same time the different intensities of tint corresponding to the various depths of the impressions. From this point to that of finding a method of reading is no doubt a very long step, but one which I have a vague idea is not insurmountable—perhaps, in a condition of the first degree of possibility. Meanwhile I intend to carry the investigation further, proceeding from the simple to the complex. I shall commence by observing what is the appearance of a single word, or two simple words—for instance, *Bonjour, Monsieur!*—pronounced by a dozen different persons with varying intonation. I shall then try to discover the law embodying these different traces. After that, I would again take a dozen impressions of another series of sounds—such as *Pas mal, et vous?*—and it may be possible, with some patience and a little ingenuity, to arrive at a disentanglement of this skein of vibrations.

New Photographic Literature.—Our collection of literature bearing on the art of photography is continually being enriched by the addition of new technical works. This really valuable movement we owe to the intelligent initiative of the special publisher of all our photographic works—M. Ganthier-Villars, to whom our science is much indebted for the zeal and disinterestedness which he manifests in bringing into notice everything that he thinks will have a favourable influence on the progress of photography. On the present occasion I refer to an interesting work by M. Pelegrin, giving a description of a new process on oiled paper, simplifying the apparatus, and making easier all the manipulations, with instructions for constructing all the necessary instruments. M. Pelegrin is, perhaps, a little late in the field; we have now-a-days the rapid processes with dry plates and emulsions, which have completely overthrown the old methods of using dry iodized paper, so slow in printing and developing, and, besides, so full of grain, however fine it might be. Nevertheless, the fine days of these amateur processes—no less than those of collodion, wet or dry—are not absolutely over. Moreover this work—if we can set aside the oiled-paper process, and replace it by the more complete and more rapid ones with dry emulsions that are now so well known—contains some very excellent advice of every kind, which will be of great service, whatever may be the process employed. The amateur of photography cannot fail to derive advantage from the perusal of this little book, which is written more especially with reference to art in photography, and for the benefit of the painter, who cannot do better than add the photographic camera to his other travelling impedimenta. LEON VIDAL.

ARTISTIC COMPETITION.

BY E. DUNMORE.*

I HAVE a proposal to make this evening in connection with this, the South London Photographic Society, which, I think, will be calculated to advance artistic photography by inspiring the members with a spirit of emulation in one particular direction. It is patent to all that the *art* qualities of our photographs is the weak point, the vulnerable heel, the tendon Achilles (if I may so call it) of the photographic frame, for the manipulative qualities are

* Our esteemed correspondent has overlooked the circumstance that we some months ago described this process as an actual fact, and mentioned results we had seen by Mr. Woodbury.—ED.]

* Read before the South London Photographic Society.

almost, if not quite, 'unimprovable'; and it is with the idea of eventually making the art-qualities more on an equality with the manipulations that I make the following suggestions.

That our President shall, at each monthly meeting announce a name, title, or designation, and during the month ensuing members of this Society shall produce photographs of single figures or groups to illustrate this title or name. The pictures competing to be judged *only* for their *artistic* qualities; no restriction to be made as to size of photograph, in order that any photographer may, with the means he has at command, be able to join in the competition. Such pictures to become the property of this Society, and once yearly, at one of our meetings that may be decided upon, a jury formed of artists—not professional photographers—shall decide upon the merits of the photographs thus exhibited, and a prize or prizes shall be awarded for the most skilful picture or series of pictures that have been exhibited during the year.

As to the shape the award shall take, that is a matter for our consideration. For my own part I would propose that a medal be designed and struck especially for this purpose in silver and bronze, so that such a medal, being intrinsically valuable, as well as a reward for merit, would be deemed worth the trouble of acquisition, and stimulate competitors to do their best. I think it would also induce many to join our Society. This is, however, a collateral advantage.

The mode of working out the plan should be similar to other competitions of a like nature. A mark or motto should be attached to each picture sent for the purpose of reference, and a sealed envelope, containing the name and address of the producer, with a duplicate of mark or motto, to be sent at the same time as a means of identification, but not to be opened until the end of the time stated, and after the award of the prizes. The photographs to be sent in to the secretary a few days—say not less than two—before each meeting.

The question of who is to pay for the medal or prizes is no doubt an important matter; but, bearing in mind the amount of a recent subscription from a few photographers for another purpose, I do not think there will be any difficulty in that respect. If even instead of giving presentation prints the money was devoted to this purpose, I am not sure if it would not be a good thing. We have now the whole of the session before us in which funds might be accumulating. However, supposing the necessary funds are not forthcoming (which is perhaps an idle supposition), a friendly rivalry of this nature would be exceedingly interesting.

I suggested figures or groups, not precluding landscape, if such should be sent in; but as the opportunities of the landscape man are so few, in comparison, during the winter months, it will practically limit the class of subjects to figure.

I would suggest that gentlemen falling in with my views on this subject should send pictures for our very next meeting, and, by complying with the rules here sketched out, be in a position at the end of the session to take their chance for a medal, if it be eventually decided to offer them.

I will now conclude by re-stating the conditions I think suitable for the purpose:—

1. Pictures may be of any size, unmounted, or mounted on plain mounts, and either landscape or figure subjects.
2. A private mark must be attached to each, but no name or address.
3. An envelope, sealed and containing the private mark and real name and address of sender, to be forwarded with the pictures.
4. That such envelope shall remain closed until the end of the session, after the award of prizes.
5. That all pictures intended for our monthly meetings shall be forwarded at least two clear days before such

meeting to the Secretary of this Society, who shall exhibit them to members only on the nights of our meetings.

6. That two artists, not being photographers by profession, shall be chosen to adjudicate upon the merits of the pictures, and from whose decision there shall be no appeal.

7. That one or more medals or other prizes shall be given for the most successful picture or series of pictures.

8. That all exhibits become the property of the Society, and be placed in an album or portfolio for the purpose of exhibition.

9. That at each meeting the President shall announce the name or title for the subject of the pictures to be exhibited at the meeting next following.

These are, I believe, the principal necessary conditions, and all else that is required is your earnest co-operation.

FAILURES IN CARBON PRINTING.

BY W. H. DAVIES.*

A PAPER like this, written confessedly to get rather than give information, must of necessity be of extremely slight interest; yet what can one do when he receives an almost imperative command to get something ready for next meeting, and when that request is couched in the gently persuasive touching tone of our worthy secretary? Now it seems to me that he has come to the wrong man this time, for like Canning's knife-grinder, I have no story to tell; but if the mere request should stir up some of the quieter—or, shall I say, lazier members. By-the-bye, I dare not say, for I have been amongst (at all events) the latter category. Laziness is decidedly catching; it is a good deal like scarlet fever. I've known it to catch a great many, especially ladies. Now, I didn't mean that laziness did that; no, it was the scarlet. But why should it be that we, who number among our members several of the—the what shall I call them, is it interesting creatures, or what?—should not have a paper from a lady member? for I feel well assured that it would meet with a most grateful and hearty reception. But, Mr. President, that is no reason why many of the quite as bashful and more than backward of our ordinary attending members should not make an effort—I said an effort, I should have said an annual supply of efforts—and give us the results of their work, of their experiments, of their experiences, of their difficulties and bothers, of their successes, or, like your humble servant, of their failures. I most decidedly think they should, and would most earnestly impress upon them this fact, that no body such as this is can go on and continue healthy and do good work unless it has the continued assistance and work of the members, and especially of those who have not taken heretofore the proper kind of interest in the work of the Society. If we are to go on succeeding we must also progress, and to that end all should assist, more especially the younger members; and the truest assistance is to keep the secretary well supplied with papers, so that it shall be a question of the Council which is to be taken first.

But I can hear the question, what on earth has this to do with the subject of failures in carbon printing? Well, I can only say, in reply, that if the questioner had the same reluctance to tackle the subject as I have, he would have remained as I should have liked to have done—absent from the meeting; but as this is impossible, and as something must be said about the subject, one may as well take it up at once, and ask, What is the cause of blisters? with the corresponding query, What is the cure?

Blisters are naturally divisible into varicous kinds; in fact, they divide the film from the support, and the first idea is at once to say, "Oh, it is only a bubble!"—that's a mistake in expression, I should have said air-bell—caused by the film not being closely attached to the support. Be it permanent, or otherwise, this is very probably one of the

* Read at a meeting of the Edinburgh Photographic Society.

causes, but it is only one. The air enclosed under the film naturally tends to expand when the hot water is applied, and so, growing larger by the heat, lifts the film from the support, thus causing a blister. The cure in this case lies in ensuring the closest possible adhesion of the surface; and the best way, in addition to the squeegee, is the placing of each print above the other, and subjecting to considerable pressure before development, and that pressure to be continued for but a short time.

Another failure is the transfer paper not being perfectly and properly coated. Many of my prints have been spoiled through this. Remedy: more care and caution on the part of those who prepare the paper. Still another cause of failure consists in not soaking the transfer papers sufficiently before putting them together preparatory to development, and to this must be added undue haste in the development by using the water too hot, or by developing too soon after contact; this last is fruitful of failures. A frightful source of failure is the quality of the negative; and if a silver printer were to make use of his silver printing experience, he would come to grief, as, for instance, a better print is got from a dense negative with a weak bath, and with a weak or thin negative a strongly salted paper is best. With carbon this is reversed; the denser the negative, the stronger must be the bichromate bath, because the weaker the bichromate, the less it takes up the high lights, and the more black-and-white is the result, and so leads to a large crop of failures. Temperature has much to do with the failures in pigment or carbon printing. Do not let the bichromate bath fall below 56° Fahrenheit, nor rise above 80° Fahrenheit, as then the gelatine film does not act as one would expect a reasonable film to behave, but displays sundry vagaries in the swelling line, that no decent or respectable gelatine or gelatinous film ought to do. Mem.—If you want to avoid some kind of failures, keep up the temperature of the bath, especially in winter. A fruitful source of failure is in the use of newly-made tissue, and this points to the need of keeping up the supply. Much better results are got (speaking from my experience) from stock-paper which has been in the house for six weeks or a couple of months, than from any freshly-used from the manufacturer's. How this is, or should be, I do not know; but that it exists is certain. The older tissues are more capable of giving the more delicate half-tone, and they stand washing and development much better. The newer-made material seems to be more able to produce that class of failure known in long past days of bad photography as soot and whitewash.

An acid bichromate bath is one of the causes of insolubility. I suppose from the rough and ready mode of crystallization, there remains a proportion of the chromic acid, and this undoubtedly produces a crop of failures; but they can be easily avoided by neutralizing or even rendering the bichrome alkaline, in which state, I think, it works not only better, but is also more sensitive, and remains without that tendency to insolubility which that with the acid reaction so often has. There may be other causes, and I should like to know them.

Light.—One of the curious experiences is caused by the caprice of the photometer, no matter which or by whom constructed. Even if I myself fail to indicate, there are certain states of the weather—with varying amount of actinism present. Say we take a photometer with the register of silvered paper, that register on a dull day will not give the same result as it will on a day of bright sunshine, or even a moderately bright day, and thus leads to many failures.

I think that either I or some other clever fellow (*sic*) must proceed to invent a coloured bichrome test, to use for pigment prints, which will register more accurately the varying qualities of light.

The greatest of the failures I have been able to bring before you this evening in the paper I have just read, and which is not worth reading, but only to be used as padding to fill in the part of an evening.

Correspondence.

INSTANTANEOUS SHUTTER.

SIR,—As you have thought my shutter worthy of notice, I must add that I have made a great improvement in it. On the slide I have affixed two strips of card, leaving space to run another strip of card on the top. This strip is perforated with a variety of openings, as follows:—



a coincides with the aperture *d* (fig. 3, page 477), *b* diminishes the length of exposure, *c* answers the purpose of a small stop, *d* and *e* give still shorter exposures; *g* will answer for the purpose better than the diagram on page 477 for diminishing sky and increasing foreground exposure, *h* still more so; *i* gives a lengthened one. The whole is blackened with photographic black on both sides.

Now, before drawing the shutter, I decide on the opening best suited, and then pass the card (fig. 5) till the selected aperture is over *d* (fig. 3), and draw the slide back to cover the lens. The shutter is then opened, a sharp stroke of the hand shoots the slide across, and the exposure is complete.

I enclose a print from a negative I thus took with the opening a last week, on one of Wratten and Wainwright's plates, and I think you will say it was successful.—I am, yours, obediently,
SMUDGE.

STRANGE FREAK OF A GELATINE FILM.

SIR,—A few days since, while working some of W. and W.'s gelatine dry plates, a somewhat awkward and very remarkable accident occurred to one negative in particular.

A lady and gentleman brought a baby to my studio to be photographed, wishing a cabinet size group. The baby taxed not only my patience and skill, but also that of its parents, so that the possibility of having a cabinet photograph was out of the question. Seeing this state of things, and for obvious reasons, I resolved to do it carte size, and, if necessary, enlarge it afterwards. But, thanks to the flexibility of gelatine, I was saved this trouble. The plate having been exposed, was developed with the usual bromide and ammonia developer; after a thorough washing was placed in the hypo bath; when taken out was examined, found perfectly sharp, baby still, and happy *pa ditto*. Now comes the most remarkable part of the affair.

After I found the negative satisfactory, I placed it in the tray, turned the tap on, and left it while I went to communicate the good tidings to those in the studio. Knowing the toughness of the gelatine films, and the copious washing these plates require, I left the water still running while I went to show my sitters out. On my returning to complete the operation, imagine my surprise to find, instead of the negative, nothing in the tray but a perfectly clear glass. My first thought was, had the film become transparent by some unforeseen phenomenon; as I thought it utterly impossible that the film could have washed off, as there was no sign of "frilling," and in so short a time. However, it did so, and I had the satisfaction of finding the babe and its *pa* hanging on to the side of the tray. Another moment and they would have been lost. With care I succeeded in getting the film back into the dish; found out the right side; then, with my fingers, drew it on the glass from whence it came. (I was using the double carte cabinet size plate.) But what have I here? The film overlaps the glass by about half-an-inch every way; and, instead of two cartes, I have two cabinet size pictures. More arrivals compel me to lay aside the tray of mysteries. After a lapse of nearly an hour, I am able to resume operations. My first performance was to cut the film in half, separating the two pictures. (Had I have thought of it at the time my plan would have been to have floated it upon

a large plate.) However, I was successful in getting the two halves safely landed on two cabinet plates; and when sufficiently adhered to the glass, was able to examine them, and, I must say, if ever I sighed a sigh of relief, it was then. There was my carte negative beautifully, proportionately swollen to a cabinet picture, or nearly double the original size, without the least sign of distortion. The cabinet proofs were sent home, and gave such satisfaction that not only did they order well, but gave an order for an enlargement.

This will tend to prove what an amount of rough usage these gelatine films will stand; and further, that in any case of emergency, when common sense and tact are required, if only met with care and love for the work in hand, many seemingly hopeless cases might be mastered, and turned to a profitable account. I can only say, always be on the safe side; use always the alum bath to every plate. Had I have done so, this would never have happened.

C. E. WYRALL.

VARNISHING TRANSPARENCIES.

DEAR SIR,—Can you, or any of your correspondents, kindly inform me if lantern transparencies can be coated with albumen instead of using varnish, and, if so, the best means of preparing and applying?—Yours very respectfully,

W. J. CHAPLIN.

[Albumen can be used, of course, but with what advantage we cannot say. Possibly some of our readers, who may have had experience, can supply a hint.—ED.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE first meeting of the session of this Society was held in the Gallery at the Society of Arts, on the evening of Thursday, October 2nd, the Rev. F. F. STATHAM in the chair.

The minutes of some previous meetings having been read and confirmed,

THE PRESIDENT referred to the weekly meetings held in a spontaneous and informal manner at the studio of Mr. Brittlebank during the summer, and regarded the meetings as a happy illustration of the enthusiasm and desire for improvement which existed amongst many of the members.

MR. COBB then read a paper on the "Photographic Signs of the Times" (which will appear in our next.) After a brief conversational discussion,

MR. BRITTLEBANK read a report of the proceedings of meetings held at his studio during the summer, as follows:—

MR. PRESIDENT and GENTLEMEN,—Since we had the pleasure of meeting here in June last, most of you are doubtless aware that a large number of members of this Society have held weekly meetings at my studio in Tottenham Court Road, and in accordance with the desire of our President and Secretary, I have kept a short record of the transactions which have taken place from that time to the present. I do not propose to make any lengthy statement of the interesting discussions which have taken place, or the many ingenious contrivances which have been shown, as it is scarcely possible for me to do full justice to them. I shall therefore simply confine myself to an enumeration of the heads of the subjects, and name the principal objects of photographic interest which have been brought forward by various members.

The first meeting took place on Wednesday, June 18th, when about twenty members were present.

MR. AYERS exhibited an apparatus by means of which any desired portion of a negative can be obscured, leaving only the part required to be copied or enlarged visible; also an improved focussing magnifier. The remainder of the evening was occupied in discussion on gelatine work, and many interesting specimens were shown by Mr. COWAN and other members.

JUNE 25th. MR. SAMUEL FRY gave a demonstration of the development of the Kingston Bennett plates, showing the method of intensification.

JULY 2nd. MR. COWAN exhibited a movable background by means of which as many as twenty different views can be mounted in the same space as usually occupied by one. Other fittings were then shown by various members, including a new

blind roller and ratchet, an ingenious cleat, and an instantaneous shutter by Mr. HARRISON.

JULY 9th. MR. COWAN described a method of intensifying gelatine negatives, exhibiting a double negative, one figure of which had been treated with chloride of copper, afterwards washed, and followed by second application of alkaline developer.

JULY 16th. MR. WARNEKE in the chair. He exhibited a large number of Russian views and typical portraits of the inhabitants. MR. HAZARD showed the effects of damp on gelatine negatives. A long discussion followed, the Chairman conclusively proving that the crystalline appearance was due to physical, and not chemical changes.

JULY 23rd. The chair being occupied by Mr. HENDERSON, MR. WEAVER exhibited an instantaneous drop shutter, also one for studio use. MR. HENDERSON then read a paper on a new developer for gelatine plates.

JULY 30th. MR. PAYNE JENNINGS in the chair. Some nickel plated steel springs for printing frames were shown. MR. HENDERSON then described a modification of the developer introduced by him, consisting of substitution of silicate for ammonia.

AUGUST 6th. Chairman, MR. COWAN.—MR. J. T. LANE exhibited a new exposing shutter for the camera. MR. HENDERSON showed a new dipper for preventing plates slipping off while in the bath. MR. AYERS showed a new form of carrier for dark slides.

AUGUST 13th. Chairman, MR. FREDERICK YORK.—MR. W. M. AYRES showed a new dipper. MR. MORSE showed a new bath for developing dry plates. The CHAIRMAN then showed some comparative results of wet and dry plates, he giving the preference to wet plates for out-door work, and gelatine plates for interiors.

AUGUST 20th. Chairman, MR. P. MAWDSLEY.—Long and interesting discussion on the manipulation of gelatino-bromide plates by Messrs Warnerke, Payne Jennings, Foxlee, Bolton, Cowan, and Cobb.

AUGUST 27th. Chairman, MR. COBB.—MR. ALEXANDER COWAN explained an ingenious mechanical device for determining the diameter of stops to be used in lenses of different focal lengths the normal exposure of one stop being known, followed by discussion on intensification of gelatine plates.

SEPTEMBER 3rd. Chairman, MR. BOLAS, F.C.S.—MR. T. LANE exhibited a printing frame for double printing. MR. COLLINS suggested the desirability of collecting the portraits of notabilities in photography, past and present; Messrs. York, Cobb, Foxlee, and others giving their experiences in dry plate work.

SEPTEMBER 10th. MR. FOXLEE in the chair. MR. MAWDSLEY gave his experience in the variations of exposure which could be given to gelatine plates. Discussion on the relative merits of ferrous oxalate and pyro and ammonia as developers. Experimental exposures of gelatine plates, having reference to the granularity of the bromide of silver. Discussion on the comparative values of gelatine as sold by different manufacturers.

SEPTEMBER 17. MR. BOLTON in the chair.—The principal part of the evening was occupied in describing various samples of gelatine brought by Mr. Foxlee and Mr. Warnerke, followed by discussion on the stability of gelatine negatives.

SEPTEMBER 24. MR. DUNMORE in the chair.—MR. HENDERSON proposed the formation of a Club where photographers could meet weekly to discuss current topics, and where the nucleus of a reference library could be formed. MR. Warnerke explained an arrangement for preserving ferrous oxalate developer. Prof. STEBBING described his method of intensification. Messrs. THOMPSON and EDWARDS also explained their methods.

At the conclusion of the report, Mr. Brittlebank proposed a number of names for election. Mr. Bolton also proposed some, and all being duly seconded and put to the meeting, the following gentlemen were elected:—Messrs. Raine, W. Bonner, C. Watkins, Talbot Lane, Tuften, C. Tims, Harrison, C. Evans, G. Lee, Payne Jennings, G. Philips, Wheeler, A. King, Clark, Sutch, Collins, H. Wilmer, T. Peat, Lewin E. Morgan.

Professor STEBBING, from Paris, was then proposed and elected an honorary member of the Society, and in course of expressing his gratification and acceptance of the honour offered him, he suggested an interchange of portraits and pictures between this Society and the French Photographic Society.

MR. WILLIAM BROOKS said that some years ago he proposed to the Society a similar project.

After some further conversation it was agreed that an instruction be given to the Committee to take steps for furthering the project.

Further proceedings of a conversational character followed when

Mr. FOXLEE exhibited some examples of fading in common tinted papers, such as the *Globe* newspaper, which had lost their tint during a few hours' exposure to sunlight. This fading suggested the importance of care in adding tints to albumenized paper.

After some conversation, Mr. DUNMORE read a paper suggesting a scheme of competition photography similar to the competition sketching practised in sketching clubs. A subject was to be proposed each month by the President, and the competing students were to bring their photographs in illustration to the following monthly meeting (see p. 488.)

Mr. BLANCHARD thought the project a good one, but that one competition a year would be better than one every month. The latter was somewhat too much, and a little too ambitious.

The PRESIDENT also thought the idea a good one. He liked an ambitious aim, and quoted a modification of old Fuller's fine lines:

"Who aims the sky, shoots higher far
Than he who means a tree."

After some further conversation the proceedings terminated.

Talk in the Studio.

TREAT TO EMPLOYEES.—The employees, upwards of thirty, with Mr. W. H. Prestwich, of 155, City Road, were invited on Tuesday evening last to a spread to celebrate the birthday of their principal. The chair was taken by Mr. James Nesbitt, principal operator of the City Road establishment, the vice being the manager of the City house in Cheapside, Mr. R. S. Griffiths. After the toasts "The Queen," "The Army and Navy," "The Ladies" (coupled with the names of the Misses Nyns and Hootop), "The Visitors" (Messrs. Joh, Gunner, and Jex), the toast of the evening was given—"Our Employer, his Wife and Family," with three times three; to which Mr. Prestwich responded, thanking his people for their good wishes, also for their attention to business, and hoping that all would be with him for next year. After the "Chairman" and "Vice's" health, followed "The Greenwich," responded to by Mr. Bruycr, manager, and "The Cheapside," with Mr. Griffiths, the meeting broke up.

CHARGE AGAINST A PHOTOGRAPHER.—Yesterday, at the Windsor Petty Sessions, Mr. William Frederick Taylor, printer and stationer, High Street, Windsor, was charged with having unlawfully and feloniously delivered or caused to be delivered to M. J. H. M. Lacordaire, professor of the French language, at Twickenham, a certain paper, falsely purporting to be a process of the County Court of Berkshire, holden at Windsor on the 22nd of July last, knowing the same to be false. The document upon which the proceedings were founded was in the following terms:—"Preliminary Notice. County Court Summons. W. F. Taylor *versus* J. H. M. Lacordaire.—This is to give notice that on the 7th of August, 1879, you will have to appear at the Town Hall, Windsor, under a penalty of £10, to show cause why the amount of £2 6s. 1½d., owing to the said W. F. Taylor, is not duly paid. N.B.—This summons may be cancelled by mutual agreement, if the amount be paid to W. F. Taylor six clear days from the date of this summons." M. Lacordaire attended at the Windsor Town Hall on the day mentioned in the summons, when the Court was actually sitting, being anxious, as he said, to obey the law, and believing that he would be liable to a penalty of £10 for not attending. After waiting several hours, he spoke to the officer of the Court and produced the pretended summons, which was shown to the Judge, Mr. Whigham, Q.C., who ordered the document to be impounded. It was forwarded to the Treasury, and this prosecution was directed. In the course of the evidence it appeared that the claim was for photograph frames. Only a portion of the order, however, had been delivered, and this had been paid for. The magistrate committed Mr. Taylor for trial at the assizes, and admitted him to bail.

HUSNIK's plan for causing a chromated gelatine film to adhere to a zinc plate is to coat the zinc plate with a solution of three grammes of chromic acid in one thousand grammes of water; when the acid has acted upon the zinc, wash off the solution, and first coat the plate with plain gelatine, and then with the chromated gelatine. Treated in this way, the film is said to adhere very firmly to the zinc; but it must be kept dry before being used, otherwise a chemical reaction is apt to set in, by which the printing surface would be spotted.

To Correspondents.

R. E. WILKINSON.—The programme of the City and Guilds of London Institute Examinations, and other information, can be obtained of the Secretary to the Institute, Mercers Hall, E.C.

HUGH WALKER.—Your lens is what is termed plano-convex, but it is evidently not a photographic lens at all, and we do not see to what photographic purpose you can put it.

J. CLARK.—Gelatine negatives for printing a border or design round portraits may be obtained of Cussons and Co., Southampton.

FRENCHMAN.—The wet collodion process as you work it will give the ordinary degree of rapidity. Whether the Boissonas process will give you greater rapidity we cannot say. It is impossible to speak of the time of exposure with any special lens in ordinary daylight, as daylight varies so much; exposure varies with time of day and with subject. There are gelatine plates much quicker than wet collodion. See examples in the Exhibition.

H. W. H. (Nottingham).—The subject of collodion transfers has been treated in various YEAR-BOOKS. It was fully treated in a recent number of the NEWS. There is no work devoted to the subject of enlargements generally. Orders for the YEAR-BOOK or NEWS you may require should be forwarded to the Publishers.

STAINER.—We have forwarded your letter.

B. L. F.—The term crystal varnish used to be applied to a clear white varnish for collodion positives. It was applied cold. So far as we know, it consisted of a solution of gum dammar in benzole. It was scarcely hard and protective enough for negatives. In the early days of photography it was often necessary for the photographer to make his own preparations; but at the present time he can purchase them better ready for use.

BEGINNER.—Anything which protects a photograph from atmospheric influences, damp, the products of burning gas, and foul air generally, will doubtless aid its permanency; hence enamelling will, there is little doubt, assist in securing permanency. For all small pictures it is, we think, an improvement. For large prints we prefer a matt surface; but if a glossy surface must be accepted, we think the enamelled surface preferable to the albumenized surface.

A SUFFERER complains of the injury to the eyes caused by continued use of the alkaline developer with ammonia. This is a trouble difficult to meet. With gelatine plates the forms of iron developer may be used, but many prefer the results of the alkaline pyro developer. It may be well to try a carbonated alkali, like carbonate of soda or potash. Both have been found successful by some, and either would remove the difficulty. Can you manage to secure a draught in your dark room which might carry the fumes of ammonia from you whilst developing?

REPRODUCTION.—The intensifier in which a little chloride of gold is added to a solution of mercury to which you refer gives very good results. The following is the best mode of using it:—Two stock solutions are kept: one consists of 1 grain chloride of gold to a drachm of water; and the other of 1 ounce bicloride of mercury and 1 ounce hydrochlorate ammonia to 20 ounces water. Two drachms of each solution should be added to 4 ounces of water, and applied to the negative, which has been developed with plain iron, fixed, and well washed.

A YOUNG AMATEUR.—You are right in supposing that special care should be used in packing photos. for transmission by post. They require such care, but rarely get it. Unmounted photographs are generally packed on deal rollers, and travel safely enough; but nine times out of ten they are inevitably injured in unpacking. The picture is rolled on first, and then the wrapping-paper is generally slipped an inch or two under the edge of the picture in commencing to roll round the wrapper. It follows that in tearing off the wrapper a portion of the picture is frequently torn as well, as the wrapper cannot be torn without tearing the picture, one edge of which is folded over it. When prints are packed in this way, it is, therefore, desirable to roll the prints round the wood first, and then place the wrapper completely over the print, without lifting up the edge of the latter to place wrapping-paper under it. In all cases avoid tying a piece of string tightly round such rolled prints, which leaves a line scarcely ever erased. Where it is desirable to secure the packet more perfectly than by a pasted wrapper, tie a piece of tape round each end of the roller. A better mode of packing unmounted prints consists in the use of a tube made of mill-board, or made by taking a sheet of brown paper, covering its surface with glue or paste, and rolling it round a wooden roller until a case of sufficient thickness be formed. Such a paper tube possesses sufficient rigidity to protect the print with greater lightness than the wood. The prints are not rolled on this tube, but rolled lightly up and slipped within it; they at once spring sufficiently open to fit the inside of the tube tightly, and a notch cut in each end and a string tied round, prevent risk of the prints either falling out or being abstracted, without infringing the conditions of the book-post.

RUSTICUS.—The Exhibition will remain open the whole of October and until the 13th of November from 10 a.m. till dusk, and on Monday and Saturday evenings from 7 till 10 p.m.

The Photographic News, October 17, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO

THE PRESS AND THE EXHIBITION.—THE KING OF ZULU.—LAND IN THE CAMERA.—NEWSPAPER ILLUSTRATIONS BY PHOTOGRAPHY.—FREE ADMISSIONS TO THE EXHIBITION.

The Press and the Exhibition.—It is difficult to be satisfied with the varied remarks with which the Photographic Exhibition is received by the press; but on the whole, no doubt, there is little to grumble about. On the contrary, if any feelings are aroused in the breasts of photographers who read the notices, they are humorous rather than critical. There is occasionally an innocent mixing up of processes—of confounding camera work with printing—which is, at times, decidedly funny, and we are always treated at the outset with a remark that a progress has now been made which a few years ago was never dreamt of—as if there had never been such things as Russell Manners Gordon's *bijou* landscapes nor Hubbard's cabinet pictures, nor such compositions as "Fading Away" and "Bringing Home the May," by H. P. Robinson. The hand that carried out Rejlander's famous studies has been still these three years, and it is quite as long since Mr. Earl, of Worcester, enchanted us with his grand sketches of Welsh scenery. We may still be progressing in our art, as we are gradually in the science of photography; but with such a past as we have seen we should certainly have dreamed of something better for the present, had we dreamed at all. One or two of our critics tell us further that permanency has at last been secured in photography by the platinotype process; but whether it is permanency in the negative or in the print, is not so clear. If the former, why then our negatives, we should say, have never had the fault of fading; and if prints are alluded to, there are some of us who have an idea that the difficulty was overcome when Mr. Swan showed his first carbon prints. We have no desire to speak otherwise than with commendation of the platinotype process of Mr. Willis, which is shown in the present exhibition to be capable of very varied application; but most of us have been familiar with the method for some time past, and know its characteristics, which are more welcome under some circumstances than they are in others. Whatever degree of permanence they may possess (and doubtless the platinotype prints are very durable), few unprejudiced photographers would rank them in this respect above or even on the same level as pigment prints prepared with Indian ink or other stable carbon compound. Again, on the subject of the gelatine pellicle, we see that emphasis is laid upon the simplicity of the gelatino-bromide. If the compound has a marked characteristic, it is rapidity; but whether regarded from the point of view of its preparation or development, one would hardly call gelatino-bromide simple as compared with other processes. As to the art criticisms expressed by the press, they are much too varied to pass an opinion upon; but, at any rate, we may congratulate ourselves that there is a disposition shown on the part of several of the papers to admit that photographers may sometimes be artists.

The King of Zululand in the Camera.—The account of the photographing of Cetewayo, with which we have been treated by the Cape papers, shows that the first portraits of the deposed monarch have been produced under rather difficult circumstances. He was, indeed, a brave man who attempted the work. The posing took place on board ship, the vessel rolling heavily, and a mild rain falling. Mr. Cetewayo was placed with his back against the binnacle, and, let us hope, with his head touching it also, if the ship were swaying to any extent. A double negative was taken, so that we may presume a rapid stereo camera was made use of for the purpose. But the difficulty with a dark skin is to secure half-tones. The bodies of our Zulu friends are apt, in photographs, to look exceedingly dark,

except as regards lips, nose, and ears, which usually shine so highly that they appear in a picture as if they were of burnished metal. To take satisfactory pictures of such models is, therefore, by no means an easy task; but we doubt not that an experienced photographer, after some practice, would be able to produce better work than that with which we have, so far, been treated from Zululand.

Newspaper Illustrations by Photography.—A new journal called *Life* is producing some fine photographic reproductions of paintings by a process termed phototypic. The prints are very finely executed, and of large size, and evidently printed in fatty ink. How they are produced we cannot say, for we have not, so far, had one of the impressions in our hands, or the opportunity of inspecting it narrowly; but that the impressions are not secured from a type block in a type printing press appears to us very evident. Of course there is no reason why the process by which it is produced should not be termed phototypic, only it is not what we, in this country, would understand by a phototype. We should rather say that the pictures we speak of are secured by a collographic method of some kind, of which, as everybody knows, there are endless varieties, both in this country and abroad. But however they are produced, the prints we have seen are exceptionally perfect, and we cannot help thinking that if the publishers can secure a wide choice of subjects to photograph, the prints will find ready purchasers among the public. The *Salon* will furnish every year a multiplicity of pictures, and when British artists see how well their brethren across the Channel become known and famous by this advertisement of their paintings, they, too, may grow wise, and open the Royal Academy for such work. Such copies of an artist's work so soon broadcast can only have the effect of enhancing the value of his original picture, and making his name more widely known, except, perhaps, in the few cases where the painting is engraved. But there are thousands of paintings exhibited every year in this country that are never reproduced by etching and engraving, and the copying and diffusion of these about the country by a process similar to that made use of by *Life* could only, in the end, be to the benefit of the artist. As to the profits arising out of such reproduction by photography, these might go to the artist just as well as to the publisher; and in the case of large editions being issued, the honorarium received by the artist ought to be a substantial one.

Free Admissions to the Exhibition.—The arrangement this year whereby one ticket is only available for one person at the Exhibition we regard as a very questionable improvement. At least it should be available for one friend, for it is rare, indeed, to find visitors going there by themselves, except in the case of casual passers-by, who pay for admittance, and are usually satisfied in half an hour or less. We suppose that the reason for the change is, that it is a simpler matter to keep tally when one person is admitted per ticket, and no doubt it is, but this is scarcely the only thing to be thought of. We have not yet arrived at that fortunate time when visitors will be so frequent that complimentary admissions will have to be cut down, and until that time arrives it is to the obvious good of the Society and the exhibitors that the collection should be as much visited as possible. When we can get people regularly to come in number to the annual exhibitions—and the general public are already learning that there is a photographic exhibition open every autumn—it will be time enough to restrict the issue of free admissions, and the step we have alluded to, practically does so now.

PHOTOGRAPHIC SIGNS OF THE TIMES.

BY WILLIAM COBB.*

It may be fairly inferred that our Society opens a fresh campaign under more than ordinary favourable circumstances, and, in addition to this, we may congratulate ourselves upon

* Read before the South London Photographic Society.

having a Secretary who has proved himself a tactician of no mean order. The selection he has made for the reading of the first paper in this new session fully justifies this remark. You are all aware that hitherto a difficulty has always been experienced in inducing members to come forward with papers for reading at our usual monthly meetings. Now, in order to obviate this difficulty in the future, our Secretary has adopted the novel idea of selecting one of the least capable of performing that duty to come forward this evening in order to disperse anything like a feeling of diffidence, and also to inspire confidence in the minds of those who are far better qualified to occupy such a position. I sincerely hope that his little *ruse* may answer to his entire satisfaction, for it is very much to be regretted that the usefulness of a society of this kind—whose main object is, or ought to be, the dissemination of knowledge and the interchanging of ideas one with another—should be impeded from such an unworthy cause. For myself, I may say that I would willingly be regarded even as a scapegoat, if by that means the interests of the Society could be advanced in ever so slight a degree.

In casting about for a subject upon which to offer a few remarks to-night, I came to the conclusion that a few thoughts upon the "Photographic Signs of the Times" would not be altogether inappropriate, as it appears to me that they are just now very ominous.

It is often instructive—although, perhaps, at times somewhat humiliating—to take a retrospective view of ourselves and our doings. We can thus more easily detect our weak points, and so guard and fortify ourselves against a recurrence of errors into which we may have even unconsciously fallen.

This remark, I apprehend, is equally applicable to societies as to individuals, for we cannot close our eyes to the fact that the course of even photographic societies has not always run smoothly; and now that we see such unmistakable signs of renewed activity, increased energy, and a bolder coming to the front, let us take care that our enthusiasm does not merge into recklessness, nor excess of zeal obscure our judgment. Profiting by past experience, and guided by discretion, we may be able to overcome all the difficulties which may stand in the way of our progress.

Photography has for some time past enjoyed a popularity such as no other science has ever risen to in such a short space of time. It embraces more within itself than any other branch in its universality; it occupies a position peculiarly its own; it has been made the exponent of many abstruse questions; and if its claims to be regarded as an art be ignored—although I believe it will eventually substantiate such claims—the sphere of usefulness which it commands is at least something to be proud of. I am, however, a little touchy upon this art question of photography, and so long as art exists only in emanations of imagination, pure and simple, without due regard to truth, so long will photography stand with a reproving frown on the borders of art's domain. But let it be once admitted that art may manifest itself in simple and refined truth, then may photography lift its dejected head and look forward with confidence to the time when its legitimate claims will be no longer ignored, but properly recognised and regarded.

Referring to the prostitution of art, hear what Ruskin said, now many years since: and I am inclined to think that things have not changed much for the better since that time. He says:—"The cause lies in the painter taking upon himself to modify God's work at his pleasure, casting the shadow of himself on all he sees, constituting himself artistic where it is honour to be a disciple, and exhibiting his ingenuity by the attainment of combinations whose highest praise is that they are impossible." Another art critic says:—"Those who are most capable of art are always most fond of nature, as such are chiefly sensible that all art consists in the imitation and study of nature. On the contrary, people of the common level of understanding are principally delighted with the little merits and fantastic operations of art, and constantly think that finest which is least natural."

But, after all, photographers have themselves much to

blame for the withering remarks which have from time to time been levelled at them and their profession. True it is that their ranks have been greatly augmented by those whose only ambition was to secure the "pot boilers" in photography, and not actuated in the least degree by a desire to raise it to its proper level. It is, however, a healthy sign of the times that these are being gradually weeded out, and a corresponding improvement in the quality of photographic work generally is also greatly discernible.

Those of us who may be regarded as having borne the heat and burden of the day, in a photographic sense, can hardly fail to recognise the great advantage which must arise from the improved method of working which has so recently been introduced, and now becoming so popular in our studios. Upon the young especially who have adopted photography as a profession would I urge the necessity of close application and study, for there is still a very wide field of research open to them which will well repay their diligence. I am well aware that it is not for all to become leaders in their profession, for there must be the "hewers of wood," &c.; and, although it may be that—

"There's a divinity that shapes our ends,
Rough-hew them how we will,"

it is, nevertheless, a fact that every man is to an extent the architect of his own fortune and position in life.

A considerable amount of correspondence has taken place both with regard to operators and assistants, and I cannot help thinking that there is far too much reason in the complaints which have been made in reference to that class. There seems to me to be a want of enthusiasm, or what our American cousins very aptly call "go." Now I can hardly imagine a really first-class photographer who lacks enthusiasm. The cold, half-hearted, phlegmatic individual altogether mistakes his vocation when he identifies himself with photography by way of making it his profession, and will ultimately regret having done so.

I cannot allow this occasion to pass without referring to the very pleasant meetings which have been held during the recess. I am sure the thanks of this Society are due to our friend, Mr. A. Brittlebank, for his great kindness in throwing open his room, and so giving us the opportunity of meeting for the purpose of discussing various subjects of interest in connection with our art. The manner in which these meetings have been conducted reflects great credit alike on Mr. Brittlebank and the members who have availed themselves of the means thus provided for their benefit. One effect of these meetings has been to prove the existence of a want which, through the liberality of a gentleman well known to most of us, is in a fair way of being supplied. Mr. A. L. Henderson has very generously come forward with a donation of one hundred guineas, provided a similar sum can be raised by the rest of our members or others who may feel interested in the scheme, with the object of founding a photographic club. The full particulars of the movement will be duly announced, and it is to be sincerely hoped that all the members of this Society will show their appreciation of Mr. Henderson's hearty good will by giving their support and co-operation in connection with such a laudable enterprise.

I will no longer trespass upon your time, as I know you are all anxious to hear any remarks which our good friend, Mr. Brittlebank, has to bring before us.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER VII.

MORE CHANGES—PHOTOGRAPHING CHILDREN—"CAN'T YOU FIND SUMMAT TO DO?"

SUCH men as Russet never thrive—never succeed! The public has a keen eye to the fixings of a place, and can tell *instantly* whether a nail has been driven by an amateur or a professional; besides, they object to seeing sawdust and nails being hurriedly swept up on their appear-

ance; it breeds a certain distrust in their minds, and, in consequence, they are almost sure to grumble at their pictures. So Russet, in spite of his hammers and saws and teetotalism, went to the bad.

My next employer was a character of another sort. He seemed imbued with the idea that the sole aim of photography should be to immortalize children. "You are no use to me," he exclaimed at our first interview, "unless you are successful with children! You please the children, and you can get what money you like out of the parents. Look round you, and you will see how I manage it." And a capital way he did manage it, but one that I found rather hindered the business, and interfered with my comfort during the term I served him.

This place of business was a veritable Noah's ark—a Wombwell's menagerie on a small scale. Everything was there that could amuse, astonish, or alarm the infant mind. In the passage you found a fountain, globes with gold fish, and a tank of sea water containing winkles, limpets, crabs, crawfish, and other crustacea; further along you entered a room flourishing with flowers, and musical (?) with birds. There were parrots with flippant talk, magpies with shrill chatter, rooks with solemn caws, canaries, larks, love birds, and heaven knows what besides. This room opened on one side to a garden, surrounded by cages containing rabbits, guinea pigs, fowls, pigeons, &c., and in a huge dog box was a chained fox. The studio and reception rooms were lumbered with rocking-horses and dolls. So far, all this was good, and Hamilton gained great fame among married folks. Fond mothers would bring their dear urchins for miles by the train to have them photographed by Hamilton. The place very often resembled a show, and what awful jobs I had sometimes to get the little beggars to quit the birds or animals, and sit quiet for two or three seconds! Mama wished dear Tommy and little Annie taken together; she was sure it would make such a lovely picture! Little Annie was feeding the pretty Poll, and dear Tommy was hugging the old fox. Mama went to fetch Tommy, and nurse made a raid upon Annie when I informed them that I was ready. Screams—shouts—rebellion! Then enter my two subjects howling. Little Annie wanted the dear old Poll, and Master Tommy sulkily demanded the fox. And poor Geo' had to make a pretty picture of them!

As a rule, I am not given to the use of strong or profane language, but I am afraid I shall have to account for a large amount of vile adjectives made use of during my stay with Hamilton. However, I did not forget Ballarat's advice, taking good care to let the steam come off only when I was in the dark room. I had such a hatred at the animal world at that time that I could scarcely be induced to pass a dog in the street without kicking it; and had you shown me a "Goldsmith's Animated Nature" I would have had your blood.

But my greatest trouble centred itself on two monkeys—two great, grey, mischievous brutes from the wilds of Gibraltar. The ill-conditioned brutes were chained to perches one on each side of the passage that led to the glass room, and very often, as I ushered some sinner into the room, my head would come within easy reach of one of them, and I would instantly lose a handful of hair. Now I am sharp enough at seeing fun, and generally know pretty well where the laugh comes in, but to this moment I fail to see what fun there was in that; yet when I complained to Hamilton, he held his sides and roared as if it was the best joke he had ever heard.

I dare say the reader will not be amazed to learn that Hamilton, like Russet, failed to make money. The birds, and the animals, and the toys were all a mistake. The pictures, although sharp and well exposed, were generally lacking in expression; it was rarely that ever a child entered that glass room with a pleasant face, and during his stay he was restless and impatient to get out to the monkeys or other brutes. "Many men, many minds," as

the saying is; but I cannot help saying once more that toys in the glass room is a mistake—a great mistake. I am now very successful with children, and I have no trouble with them. My plan is simple, but effective. If possible, I take all my children by appointment; when they arrive they are shown to the dressing room, where mama or nurse makes the darlings ready. I go to my dark room, prepare my plate, arrange my blinds and lighting, and, in short, have everything ready when my little visitor arrives. Quickly, but without bustle, the pose is got, the focus obtained, and then I speak for the first time. The child's attention is immediately rivetted, the cap withdrawn, and one—two—three—four—speaking all the time—the picture is taken. All the attraction I have in the shape of toys or noise is a little bell which I use for the very young babies.

As you may suppose, I did not stay long with Hamilton. I wouldn't have had a hair between me and heaven if I had stayed long. At this period I visited London for the first time, but although well recommended and good character, I failed to get a situation in a good house; things were very backward that year, and I found the employers turning away their assistants in place of engaging more.

I was not very much depressed—I was single then, and had saved some money, so I walked about and enjoyed to the full the sights of London. I had walked from Paddington to Mile End, from "Mother Red Cap" to the "Elephant and Castle," and was on the point of turning my nose northward again, when, by accident, I dropped upon a wonderful and exceptional sample of the photographic profession.

This studio stood in an out-of-the-way corner in rather a stirring neighbourhood; the front of his building was plastered over with bills and show-cases; conspicuous among the last was a case containing letters from bishops, lords, and grand people, praising his work and giving immense orders. It reminded me of the flaming notices outside the booths at country fairs: "Patronized by all the crowned heads in Europe." In gilt letters over his show-cases flamed the striking name of "Baron Bilklarsky, Artist."

By Jove! Here was a foreign nobleman, I thought; I hope he is in want of some one; and I entered the shop, to find myself face to face with the noble baron. I confess I was somewhat disappointed at his insignificant appearance. He was black, little, and white-faced. However, he treated me civil enough, and listened to me patiently. He shook his head despondingly when I finished, and cried, "Bad times!—bad times! but hi 'ave reasons to be thankful! Hi 'ave room for you, but I can't give you much money. 'Owever, you knows as 'ow 'arf a loaf is better than none, and if you likes you can come to-morrow morning."

I was profuse in my thanks, and there and then engaged to the noble Baron at a mere nominal figure. I can't help laughing now when I remember the sweating process that the noble Baron put me through during the few days I remained with him. He was an artful cad, and took advantage of the countryman. He started me to clean up his place—Heaven knows when it had been touched in that way—and I scrubbed, and brushed, and coughed, and sneezed, and carried forth bucket after bucket of filth until I was as tired as I possibly could be, and as black as a sweep. When I sat down to have a moment's rest he pounced upon me. "What!" he cried, "can't you find summat to do?" and then he would start me off upon another brushing and scrubbing expedition. On the evening of the second day, just as it was getting dusk, and while I, dirty, sticky, and tired, rested my back against the door of the dark-room, up jumps the Baron, like a Jack-in-the-box, shouting his favourite war cry, "Can't you find summat to do?"

I told him I thought I had done pretty well for one day. He lifted up his hands in amazement, and pointing to the

glass room windows exclaimed, "I declare, you have not touched these winders, and I expressly told you to! Here are the leathers—stick into them!"

"Baron Bilklarsky!" I exclaimed with dignity, "is it customary for your operators to clean your windows?"

"Certainly—certainly; people must not be above their work!" and he grinned wickedly as he spoke. I said nothing in reply, but went out and engaged a lad to clean them, paying him a shilling for the job. The Baron said nothing, but chuckled and grinned in the most provoking manner, while I walked about in dignified silence and watched the lad. At length the job was done, and I prepared to go. I deliberated whether I should not have an understanding with him at once or not: when, recollecting that the cleaning was all done now, and I possibly might have a quieter life of it in future, I resolved to depart in peace, when lo! at the foot of the stairs I stumbled upon a gas collector.

"William Clark?" he exclaimed, inquiringly.

"No one of that name here," I answered. "Baron Bilklarsky is the only tenant here."

"Bosh! He's no more a Baron than I am!" cried the collector, evidently getting angry. "I know him! His name's here—William Clark—and him and I was at school together; and what's more, if he don't pay his gas to-night I'll turn it off at the main!"

"Wait a minute; I'll tell him you are here!" I cried, seized with a sudden idea. I then bounded up the stairs, and opening the door, shouted, "Mr. William Clark, here is the gas collector come for his money, and if you don't pay he'll turn it off at the main!"

I shall never forget his face at that moment! The grin was all on my side now. He seized a broom, and showing his teeth like a baboon that meant business, he came towards me in such a manner that I deemed it prudent to depart without further parley.

As I said before, he was an artful cad. He got the countryman to clean his place and pay a man to clean his windows—and all for nothing.

(To be continued).

PHOTO-MECHANICAL PRINTING AMONG THE JAPANESE.

IN the course of one of my peregrinations in the streets of Tokio—writes Baron R. von Stillfried* to the *Photographische Correspondenz*—I was struck with the appearance of a print in a printseller's shop, and my curiosity was excited to the highest degree when the owner of the establishment assured me that the print in question had been produced by the aid of photography, and by a new method—the invention of a Japanese. The result of this was, that after some trouble I found out the inventor, but I cannot pretend to have been received by him with any degree of civility. Such a reception, however, was only to be expected by one who is acquainted with the love of the Japanese for mystery, and their mistrust for foreigners. The man was exceedingly uncommunicative, returned no answers to my questions, and would not hear of selling me his secret. I was, therefore, half inclined to give the matter up, especially as I was very busy in other quarters, and after examining the proofs had no very great opinion of the process itself. Chance, however, threw in my way a young man who, as it subsequently appeared, was an opponent of the inventor's, and from him I learned some particulars which seem to be worth noting, and which, after I have followed them up, I hope to be able to report with greater detail and certainty.

Meanwhile I have ascertained what follows. There appears to be a certain substance, sensitive to light, which has long been known to the lacquer manufacturer. This substance is said to be of a brown red colour, and of the

consistency of putty; it possesses the property of becoming hard under the action of light, and, if dissolved in certain solvents, which are unknown to me, it is deposited therefrom, but when kept in the dark it remains soft and soluble. A plane wooden block is coated with this pasty substance to a thickness of about five millim., and the whole made smooth with a roller; it is then exposed under a negative. After exposure for about twelve hours in the sunlight the image will be seen to be transferred to the block, in that the exposed parts have not only become hard as stone, but have also lost the peculiar lustre possessed by the soft mass; hence a dull map is seen on a glossy ground. Now, if I have rightly understood my informant, the highest lights are then removed with a scraper made of bamboo, a process which appears to be very easy, as the outlines of the exposed parts are so very hard as to render an encroachment on them impossible. With another instrument, shaped like a comb, and also made of bamboo, the parts to remain white are then worked up by passing the instrument into and across them, and the whole is finally exposed again to the light, so as to render hard the still soft parts. The plate, which I had an opportunity of examining, although prepared in this rough and primitive fashion, appeared to have quite sufficient depth for printing purposes. Apart from the fact that the process seems ill adapted for the reproduction of half-tones, even with the above-mentioned after-working, the defects of this plate seem to be due to the unskilfulness of the workman in the use of the bamboo comb, and to the fact that the negative itself was a bad reproduction of an equally bad photograph. With negatives of linear drawings, the parts that remain soft and soluble are said to be removed by the application of a solvent, and the plate is then ready for printing without a second exposure.

In the plate to which I had access, and in examining which I was watched with Argus eyes, I was able to see that the depth (about three millim.) was quite sufficient, and also to note the thickness of the layer on the wood-block. Of the colour and other qualities of the substance I could form no opinion, because it was completely blackened with the ink, and I was not allowed to do anything to the plate. Taking advantage, however, of a lucky moment when I was unobserved, I succeeded in proving that the substance is as hard as stone, for it resisted an attempt to cut into it with a knife. In the plate to which I refer, which was the reproduction of a figure, nothing except the white of the shirt had been taken out; the lights of the face seemed to have been pressed in with a blunt instrument. The paring and scraping to which the parts representing the dress and background had been subjected were quite visible, notwithstanding the thick layer of ink. The printing is carried out in the same way as the Japanese wood printing, which has often been described; Chinese ink is used, and the absorptive quality of the Japanese paper is of great importance.

My informant, who had only seen the process in execution, and otherwise understood nothing of printing, promised to get me further information, and to obtain some specimens of the substance before it had been acted on by light. I showed him some asphalt and some bichromate of potassium, but he assured me that nothing resembling either of these was used in the process, or he would have been sure to have seen it. Still, I hope to get at the bottom of the subject, though this is not so easy in Japan. I should be very glad to receive from technical photographers any hints or advice on my future researches, and any surmises as to the nature of the substance.

PHOTOGRAPHING CETEWAYO.

A SOUTH AFRICAN journal, the *Cape Times*, gives some details of the bearing of the great Zulu chief in front of the camera. After describing his experiences on board ship, the reporter says:—

He has not given over the assertion of his dignity; and

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in this, I think, he has been much encouraged by the amount of waiting upon which he has received. On Saturday last, after promising to have his photograph taken, he kept photographer and every one else waiting upon his pleasure for some hours. He was pleased to be gracious enough for a few minutes, and then went back doggedly to his seclusion. His observations often show, as his face would convey, that he possesses no inconsiderable fund of humour. He was good enough to come out of his shell during the time his photograph was being taken, and the smiling face he put on, as his photograph will show, proves that he is not altogether unacquainted with the ways of the world. When his wives were being photographed, nothing could induce them to leave off giggling or to sit still, until Cetewayo sternly commanded them to do so; and then at once they were as motionless as statues—it was evident they had not forgotten the temper of the king, and the way he once reigned in Zululand. When he was afterwards asked to sit for another photograph he declined doing so, on the ground that he was not going to make a fool of himself twice in one day. He would not sit with his wives, because, he said, having his photograph, they could easily cut the group of women in two, to put him in the centre; and he suggested that if other photographers wanted his likeness they could photograph his followers as often as they liked, and the pictures would sell just as well; for the white man would buy anything. The photograph will show Cetewayo to be an enormous man of a little under six feet high, a handsome, over-fed specimen of humanity, with nothing repulsive whatever about him. A tape measure round the chest would probably show sixty inches, and each thigh half that number of inches; and this should convey what an immense fellow the king is. Yet he is not ungainly in figure, and there is an unmistakable dignity about him, which, together with his fits of sociability, have drawn towards him the good feelings of his escort.

The wives of the king, who are his fellow captives, are four in number, and are tall, lithe, shapely women of about twenty years of age. The photographs are not just to them, for their attractions seem to be in their vivacity and their good temper. Like their lord and master, they are anxious about their dress, and at the present rate of 'petting' to which they are indulged we may expect before long to hear of their subscribing to the *Ladies Journal*. On Sunday Cetewayo was taken on a tour of inspection of Her Majesty's ship *Boadicea*, which visit seems to have given him a terrible shock; such a visit a year ago might have saved England some millions of money."

The photographer who "took" Cetewayo on board the *Natal* says:—

"On Saturday morning the steamer was rolling too much to be sure of success. We, however, were obliged to do the best possible under the circumstances. Having placed everything in readiness, we informed the king, through his interpreter, that we were ready, and received answer that the king was 'going to sleep,' and did not wish to be disturbed. After a while we could hear him speak, so we once more informed him that we were waiting for him. He did not seem inclined to appear, and Captain Poole thought it best to give him some inducement to do so, which was accomplished by catching a fish. This made him come out at once, and after some palaver the king was persuaded to seat himself near the compass, with his back against the wheel. He appeared to be very nervous, and requested that it might be done at once in order to have it over. He seemed to dread the camera, and did not like the look of the lens. We succeeded, however, in getting our first double negative. He was more at ease when he found that it was done without his being hurt; but in order to show him what we were doing, Commander Caffyn showed him a photo of Dabulamanzi, at which he seemed pleased, and at once disencumbered himself of his blanket to show his figure, of which he appears to be very proud. We succeeded in a second double negative, and then he sternly refused to have any more taken."

THE PRESS AND THE EXHIBITION.

(From the Echo.)

THE annual exhibition of the Photographic Society, which was opened at the Gallery of the Old Water-Colour Society, Pall Mall East, yesterday, possesses an unusual degree of interest, not only for members of the profession and amateurs, but for the public at large. Both from a scientific and an

artistic point of view, the feature of the present collection which most particularly deserves and commands attention, consists of the admirable examples it comprises of portraits, landscapes, and seascapes painted from negatives taken instantaneously on gelatine plates. Experiments with this process have only been carried on for a little over two years, but it would already seem to be almost perfected, a result which is generally ascribed to the labours of an amateur named Mr. C. Bennett. The fact that a photograph can be taken by the gelatine process in a sixth of the time, during summer, that would be required if the collodion process were employed, and in a twentieth part of the time during the winter season, gives it an obvious and extraordinary advantage over its rival. People will, practically, no longer have to "sit for their portraits," which, in the majority of cases, involves the assumption of an unnatural and uncharacteristic expression of countenance and pose of figure, and which has been the cause of some of the most marked and vulgar defects of photographic portraiture. In photographing landscape, the life, movement, and sentiment of Nature will be preserved by the new process in a measure that the old one, which it threatens to supersede, never attained. All that is most beautiful in man and Nature is fleeting, and subtle, and delicate, and no chemical process that is not instantaneous can ever hope effectively to render, even in black and white, the momentary and evanescent. The pulsations of light and shade in the air, their gleam and play on stagnant or rippling water, the procession of the clouds in the sky—now rushing broken and wild in an upper current of wind, and now reposing in majestic, rock-like firmness on the deep, still azure spaces—these are aspects of external nature that photographers have never yet been able to portray with any close approximation to the realities, and there are corresponding traits of human character and grace that have equally eluded their grasp. It would, perhaps, be too much to say that photography has at last, so far as form is concerned, come into threatening competition with *Fine Art* in any of its divisions, but it has certainly advanced a considerable way in that direction, and promises to progress still further. Let anyone examine Mr. Joseph Gale's two small photographs of "Brixham Trawlers" setting out to sea (Nos. 4 and 5), and the same artistic amateur's "Landscape" (No. 7), where the swallow is swiftly flashing over a lake that reflects her shadow on its clear bosom—all of which are taken from instantaneous gelatine plates—and he will have a very favourable opinion of the capabilities of the new process. Messrs. Wratten and Waiuwright's "Instantaneous Views of the Boat-race, 1879" (No. 373), with the bustling river and puffing smoke, are also capital examples of this method. In the department of portraiture there are no works in this exhibition that excel, or perhaps equal, Mr. Robert Faulkner's "Portraits of Princess Victoria, Princess Maud, and Princess Louise of Wales" (113), and his "Three Studies of Expression" (114), enlarged cartoons worked up in red carbon; but the "Specimens of Portraiture taken on Gelatine Plates" (129), which hang near, are little inferior to them. Attention will also be attracted to the clever specimens of Negatives printed in Platinotype (311 to 351) by the inventor of that new process, Mr. W. Willis, jun., of Leo. These works are permanent, and have many attractions, notwithstanding a certain coldness and hardness of tone. It would be impossible for us to mention the whole of the large proportion of the 404 entries in the catalogue of this exhibition that we have marked for commendation. Mr. Vernon Heath's "Burnham Beeches" (7), "A Group of Firs," an untouched enlargement (14), and other contributions from the School of Military Engineering; Mr. S. G. Payne's agricultural scenes, so solid and substantial (ranging from 64 to 71); Mr. Payne Jennings's landscapes, taken both by the old and new process (from 176 to 184); Col. H. Stuart Wortley's admirable studies of breaking waves and moving clouds (from 187 to 204); Mr. H. Garrett Cocking's melodramatically-composed, but well-executed "Fern Seller" (223); and enlarged portraits of Professor Huxley (242) and Mr. Birket-Foster (267), by the Woodbury Company—are, however, works of very conspicuous merit. A similar compliment must also be paid to the highly-picturesque portraits of "Inhabitants of Armenia," and pictures of "Incidents of the War, 1877-8" (383), taken by a native photographer named Nikitin, and to Mr. F. G. Newton's "Views in Demerara, taken on a visit on the Falls of Kaieteur" (386). Altogether there is much to interest and instruct the public in the present exhibition of the Photographic Society.

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THE PHOTOGRAPHIC EXHIBITION.

CLOSER inspection and more close familiarity do not in any degree militate against our high appreciation of the general excellence and highly interesting character of the present Exhibition. Of absolute novelty there is very little. There are no great pictures, no very ambitious attempts. In photo-engraving, a direction in which we naturally look for progress, there is nothing new. There are not even any new styles in portraiture. No new carbon or other printing process. But there is a high general excellency, whilst in art qualities there are a few pictures as much above the general excellence as a few years ago there were a few above the general mediocrity. In the growth of photography, as in the advance of civilization generally, the progress is lateral as much as upward. Of those who take the last few steps from high excellence to perfection, the number is always small.

It is remarkable that of those pictures which possess distinguishing excellence the majority are produced by the aid of gelatine plates. We say the majority, because it is not the case with all. The five instantaneous studies of English rural life by S. G. Payne are produced by wet collodion, that gentleman, as he assures us, never having succeeded so well with gelatine as with wet collodion, although his gelatine results, as evidenced in some groups of children before us, are very excellent. Some of Colonel Wortley's grand instantaneous effects are also by wet collodion. The superb landscapes exhibited by Mr. W. Bedford are all, we believe, from wet collodion negatives.

Gelatine plates do, on the whole, however, take first rank in excellence, or excel in those special qualities wherein hitherto dry plates are supposed to be wanting. The little gems exhibited by Mr. Joseph Gale, "Brixham Trawlers," are fine examples of all which dry plates were once supposed to be incapable of giving, singular delicacy and softness. Their artistic qualities are the charm of the pictures, but these artistic characteristics owe much to precisely the right technical qualities. The composition of the group of boats in each is very admirable; but if the development had been less judicious, if it had been managed so as to produce hard black-and-white results, all pictorial charm would have vanished. As it is, there is a soft transparency and tenderness which is very valuable: a white sky and white sea would have spoiled all pictorial effect. A pretty bit of landscape (No. 6) is rather black, but possesses an especial interest in a well-made out swallow flying low and skimming the surface of a piece of water, in which it is well reflected. The lines appended are appropriate—

"The swallow, too, is come at last,
* * * * *
I saw her dash with rapid wing,
And hailed her as she passed."

The effect here is perfectly satisfactory, and question as to the genuineness of the result, and whether bird and landscape were produced at once in one negative, or whether the result is due to skilled combination, is scarcely fair. If due to the latter, we can only say it is most skilfully effected; and if the result of one shot, the skill and the good luck are both exceptional.

A frame of studies by W. Wainwright, jun., on home prepared gelatine plates (21) will repay examination: some pleasant landscape bits, groups of cows and pigs, are very good; as are the Italian views of Mr. Andrew Pringle. These are instructive also. It has been customary to regard landscapes produced by the photographers of Italy and other places in the south of Europe as lacking in atmosphere, softness, and breadth, because of the hard, brilliant light and absence of suitable atmospheric conditions belonging to the country. But Mr. Pringle has mastered this difficulty so far as it may have existed. There is no hardness, no chalky lights, and sticking-plaster shadows: all is harmonious, and full of tone and colour. Mr. B. King's instantaneous effects on gelatine plates are very good. The rarely beautiful landscapes exhibited by Mr. Payne Jennings very plainly show that process is quite subsidiary to person. The photographer, and not his method, determines the quality of the picture. Here are prints from wet plate negatives, and prints from gelatine negatives, side by side, and all possessing the same especial quality of luminousness which distinguishes Mr. Jennings' work. These pictures have received from the jury "honourable mention"; the wonder to us is how they escaped a medal!

Col. Stuart Wortley has often contributed grand instantaneous effects of sea and cloud. This year he has exceeded himself. His large studies are marvellously fine. What a pity that the effect is marred by a polygonal aperture in the mount in place of a simple circle! A series of smaller circular pictures, entitled the "Dogs of Scilly and their Prey," presents some marvellous effects of instantaneity, in breaking waves, throwing up clouds of spray, rendered with a degree of crispness which is as effective as wonderful. The series well earn the medal they have received.

Wet collodion still holds its own. Nothing could well exceed in beauty the charming series of Welsh and Devonshire scenes sent by Mr. W. Bedford, in which he maintains—it would be difficult to transcend—the traditions of his father. The "Devonshire Lane" (48) to which the medal is awarded, is a singularly fine landscape composition, combining vigour with tenderness and delicacy, and fine atmospheric softness with great brilliancy. A series of frames by James Valentine and Sons, of Dundee, contains some very interesting pictures. The studies of sea subjects in No. 28 are very good; there is a boldness of style and vigour of treatment which are very effective. Of Mr. S. G. Payne's instantaneous landscapes on 12 by 10 plates we have already spoken. It is very difficult to say which is best; perhaps "Carrying and Gleaning" (68) is one of the most effective. But in all the skill and taste in selecting and securing the grouping, and the photographic skill in rendering so perfectly are beyond praise. The landscapes of Mr. Vernon Heath are, as they always are, very perfect, well chosen, well lighted, and singularly perfect in treatment and manipulation. A frame of veteran trees from Burnham Beeches present some noble pictures. An admirable rendering of Stoke Pogis Church, rendered immortal as the scene of Gray's "Elegy," from which the curfew tolls the knell of parting day, is a fine as well as an interesting picture. Mr. Heath's contributions have obtained from the jury honourable mention.

Our list of noticeable landscapes is by no means exhausted; but as we must return to the subject we leave them for the present to fulfil our promise of last week as regards giving the name of contributors receiving honourable mention. They are as follows:—Messrs. Vernon Heath, B. King, James Valentine and Sons, W. J. A.

Grant, Henry Dixon, Albert Clout, C. Bossetti, H. P. Robison, W. Gillard, W. Huggins, D.C.L., H. S. Mendelssohn, Alfred S. Fisk, W. Willis, Jun., Nitikin, Brandel. We cannot but feel extreme regret that whilst untrammelled by conditions as to number, the jury did not feel at liberty to award medals to several here distinguished by honourable mention. They are all well worthy of distinction; but there are special conditions, in some cases, which take the cases out of the ordinary run of merit. In the case of Mr. Willis, he has not only exhibited fine specimens, but he has enriched the art by the invention of a new process, new in principle, and excellent in result, with the added advantage of probable permanency. Invention, it is fortunate, is not dependent upon such encouragement, otherwise we should feel that this was distinct repression in place of encouragement. Mr. Grant's Arctic photographs are distinctive in their excellency, under peculiarly trying conditions, and were well worthy of a medal. Mr. Robinson's grand example of *chiaroscuro* is a rare photographic triumph in artistic work. It is not, perhaps, a pretty picture. The model might have been attractively beautiful, and the cottage interior accessories rare and picturesque; but this was not the aim of the picture. It seems to us an attempt in photographic monochrome to produce the curious contrast of two lights, firelight and declining daylight, and to secure breadth and keeping at the same time, and this is effected with a painter's skill. And the artist who takes photography a step beyond its usual boundaries deserves, it seems to us, especial recognition. But to the recipient of so many gold and silver medals, a bronze more or less can matter little, beyond the disappointment in not finding the aim of his work recognized. Possibly with a full and complete jury this might have been otherwise. On the whole, the awards will give satisfaction—a rare circumstance, and one to be thankful for.

REMOVING HYPO FROM PRINTS.

A CORRESPONDENT in another column suggests a very simple and, probably, efficient method of removing the hyposulphite from silver prints. A solution of hyposulphite of soda, or of any other salt, is necessarily of greater density than water, and will naturally sink by its own gravity, so as to form a distinct stratum underneath the water. It follows that in the ordinary method of washing prints by leaving them soaking in a dish of water they are, in reality, left lying at the bottom soaking in a weak solution of hyposulphite, in which it may often happen the initial steps of fading are originated. Mr. Higgin suggests that the prints shall be confined to the upper strata of water, the heavier solution of hyposulphite being, as it is, gradually soaked from them suffered to sink, and so be carried away from the prints.

In some washing machines, we have seen, this principle has been partially recognized, as the prints have been laid on a net-work of gutta-percha suspended within the washing trough. But the trough has been made to rock so as to keep the prints and water in motion, and this rocking motion would continually stir up the hypo solution to mix with the mass of water, and so defeat the end. To carry out the principle described by Mr. Higgin, it is necessary that the vessel should be kept quite still, so that the hypo solution may rest at the bottom undisturbed.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY AT THE NATIONAL LIBRARY OF FRANCE—ILLUSTRATED WORKS AND PHOTOGRAPHIC LITERATURE—BANQUET OF THE CHAMBRE SYNDICALE OF PARIS.

Photography at the National Library of France.—When one of the great offices of State organizes a photographic department we have every reason to express our satisfac-

tion, and are bound to take note of this proof of the appreciation in which are held the services rendered by our art. The National Library of France, whose reconstruction and re-arrangement have lately been completed, is about to add to its surroundings a properly-fitted photographic studio. In compliance with the demands of our time, and to meet the requirements of the various interests concerned, the French Department of Fine Arts had given permission for the photographic reproduction of all the works and objects to be found in its valuable collections; but it was found in practice that the enjoyment by the public of this official privilege was accompanied by many inconveniences which it is now desired to put an end to. Rare engravings, costly books, ancient artistic bindings, historical medals, unique coins, old cameos, are not always properly handled by photographic operators, among whom, though there are many who understand the value of the objects confided to them for copying, there are others who do not exhibit the necessary care in dealing with them. In this way important historical and archaeological records often run the risk of damage through unskilful handling. Moreover, it is scarcely prudent to entrust to everyone who presents himself precious works of art, the property of the nation, and guarded for ages with the greatest and most jealous care. It became, therefore, necessary to discover some means of combining the required security of custody, the duties of the state, and the interests of the public; from whom, notwithstanding the acknowledgment of certain abuses, it was impossible to withdraw privileges as wise as they are liberal. With this laudable object it was determined to establish within the precincts of the National Library itself a photographic department properly equipped and managed. To organise such a department has been found sufficiently difficult. Should it be left to the authorities of the library to take the negative, so that only a copy of the object to be photographed would be delivered to the public? In that case the photographer would have only to make a reproduction—which is always a disadvantage—or else he would be compelled to accept a negative, produced officially, under conditions which would often not be those that he would have himself selected. Would it be right to extend the liberty of action so far as to allow the photographer to take his negative in the way he himself thought best? This, of course, would be the arrangement most wished for by the public; but in that case the operator, often an uneducated assistant, not possessing a proper acquaintance with the value of works of art, would be called on himself to place in position the object that he intended to photograph. These questions have been examined from all sides and without venturing to assert that they have been definitely settled, I am in a position to state that they are on the point of being so, and that they will be set at rest by the promulgation of a set of rules more elastic than those which are temporarily in force in the interest of the public service. As it seems to me, the interests of all concerned would be sufficiently protected by an arrangement permitting the photographer to point out to one of the library curators, told off for the purpose, the position in which he wishes to have placed the object that he is about to photograph; he should enter into a complete understanding with this official, and after the position is completely arranged to his liking, he should be at liberty to take his photograph in his own way. A dark room would, of course, be placed at his disposal by the authorities, where he could develop the image, and if the latter were not satisfactory, he would be allowed to recommence his labour until he had attained the required result. In this way the object would not have left the charge or custody of the official authorities, and every one would be acquainted with and responsible for the special duties required of him.

Publication of a Work Illustrated by Photo-Engraving, and of a Practical Text-Book on Phototypie.—The application of

photography to the illustration of books is now an established fact, independent of every influence except that of the arrangements necessary to keep order in its manipulation on a large scale. All the world of literature and science experiences a lively satisfaction at observing the daily increasing importance of the effective—one might almost say indispensable—series that photography is able to render to artistic and scientific publications. Very recently the Director at the Museum at Lyons has published a most interesting work on the Fine Art Exhibition which was held at Lyons in 1877. This work constitutes, in fact, a descriptive analytical selected catalogue, with reproductions in photo-engraving, of the art objects shown at this exhibition, one of the most artistic and complete of its kind that have been organised of late years. Some of the most valuable of art treasures were exhibited there; among them the "Martyrdom of St. Sebastian," by Raphael, pictures by Ruysdael, Vandyk, Adriaen van der Werf, Miervelt, Grenze, Delacroix and Regnault; statuettes by Tanagra, the Vienna Venus, since added to the Louvre collection, ivories and carvings of the highest order of merit, tapestries of especial beauty, superb enamels, carved furniture of the renaissance, and metal work of the Gothic period. The selection is issued in the form of an album, and is in itself a real work of art which cannot fail to be of great service to art students. The plates in photo-engraving have been executed by the Dujardin process in a style of great excellence. It is much to be wished that all art exhibitions could be perpetuated by the same means, and thanks to the labours of our phototypographers, Goupil, Lemercier, Thiel, and Dujardin, we are making successful progress in that direction. A work of this description prolongs, so to say, an exhibition indefinitely, to the great advantage of the history of art, which is thus able to preserve more than the simple date of the event, as well as of art education, which can continually profit by it. While on this topic I may be allowed also to call attention to the publication (after some delay, due entirely to unforeseen circumstances) by my esteemed colleague, M. Leon Vidal, of his new "Practical Treatise on Phototypie," which I believe will be found to be a most serviceable work. Phototypie is destined in my opinion to popularize all the productions of photography, and to serve the different branches of art and science in the character of a powerful engine for spreading all over the world intelligence and information which must develop the cultivation of the human intellect. M. Vidal may be unequivocally congratulated on the project that he has devised of making known all the processes for positive printing by phototypie, whose future seems to be unbounded; and not less in the wonderful skill with which he has put his idea into practice. His book will meet a real want, and I recommend strongly all the photographic journals, without distinction of nationality, to reproduce extracts from it. The progress of photography and of the arts depending on it will never be impeded by the barriers which separate one people from another, if only those who really desire to promote it will abstain from raising the new hindrances of national jealousy and enmity; these passions have absolutely no place in a question relating to the independent practice of an art or of a profession which is common to the whole world.

Banquet of the Chambre Syndicale de la Photographie at Paris.—At the banquet of the *Chambre Syndicale de Paris* held on the 6th of the present month, the progress of photography seemed also to be the chief subject of conversation among the members. All the proposals made had for their object the increasing of the number of members of the association, and the extension of its influence, so that it might be able successfully to promote the prosperity and the interest of the photographic profession. In the discussion following the banquet the question was raised of finding some means of giving fresh life to the association, but there seemed to be a difference of opinion on matters of detail; in fact, a general fear was expressed that some of the measures proposed departed too much from the line

of conduct laid down for the *Chambre Syndicale* by the powers conferred on it by its constitution. These powers, however, are not exactly settled, since in France, contrary to what is the custom in other countries, associated institutions of the nature of *Chambres Syndicales* possess no official character. Even in Paris they are dependent on the authorities of a private enterprise, by whom, in return for payment, they are furnished with a locality and means for holding their meetings. It is to be hoped, however, that the banquet will produce good results. Unfortunately, it was attended by a very small number of guests, owing to a paragraph inserted in the circular of invitation, compelling any subscribers who wished to speak at the banquet to submit their toasts beforehand to the convening committee for approval. This regulation in many instances offended sentiments of liberty and good fellowship, and was the cause of many abstentions. Nevertheless, those who abstained themselves need not have been alarmed, as in the end perfect freedom of speech was accorded to every one.

KARL VERSNAEYEN.

PHOTOGRAPHS OF BEAUTIFUL WOMEN.

PHOTOGRAPHERS and the public generally are familiar with the fact that photographed portraits of several beautiful women, moving in good circles in English society, have had a somewhat extensive sale for some time past. How portraits of private persons got into circulation we cannot say, but a newspaper writer has recently professed to explain the matter, intimating that some of these ladies voluntarily issue these photographs, and make a market of their pictured charms. As the story told seems to have been false, an action for libel has very naturally followed, the report of which, as published in the *Times*, may be specially interesting to photographers. We give it in a slightly condensed form:—

At the Guildhall, on Saturday, Adolphus Rosenberg, of 4, Ludgate Circus Buildings, the publisher of *Town Talk*, was brought up on a warrant before Alderman Staples and Sir Thomas Dakin charged with publishing a defamatory libel of and concerning Mrs. Cornwallis West. Mr. Edward Lewis prosecuted, and Mr. Beard appeared for Rosenberg.

Mr. Lewis said he appeared to prosecute the defendant on behalf of Mr. Cornwallis West, of 49, Eaton Place, and Ruthin Castle, Denbigh, of which county he is the Lord Lieutenant. The defendant was the publisher of a paper called *Town Talk*. Of the character of that paper he need say nothing there, but the libel was of such a filthy and foul character that he wished publicly to send the contradiction forth to the world. He desired to say publicly that every single person who was engaged in the printing, publishing, and making up of the paper, and those who assisted in disseminating the libels, would be proceeded against, and the law would be put in force against them with the utmost rigour. Every single statement or particle of statement contained in the lengthy article he was about to read to them was from beginning to end an infamous lie. There was not only not a particle of truth in it, but there was not the semblance nor the shadow of a fact of any kind upon which that monstrous superstructure of lies had been built. The article was headed 'Mrs. Cornwallis West at Home.' The writer proceeded:—

"It is an undoubted fact that the most aristocratic portion of English society has done more towards making our British higher classes a byword for scandal and scoffing than all the efforts of demagogues and republicans put together. To think that a lady of exalted position should find it worth her while to be photographed for sale is a disgrace to the upper ten thousand, and I trust that the rumour is true that Her Most Gracious Majesty has issued an express wish that this traffic in the likenesses of photographic beauties shall be discontinued. It certainly does not make foreign countries and critics think much of our Lord Lieutenant of Denbigh that, for the sake of gratifying his wife's stupid vanity, and realizing a few pounds per annum, he allows that lady's photo to be exposed for sale at a price from one penny to two shillings and sixpence. Mr. Cornwallis West is a dignitary, who ought certainly to uphold his position as a Lord Lieutenant, and he does not do so when he allows Mrs.

West, the bone of his bone, and the flesh of his flesh, to make the public exhibition of herself that is daily seen in our fashionable shop windows. When an official of high rank permits his wife to display her charms side by side with the portraiture of half-naked actresses and entirely naked Zulu women, he can have but little respect for himself, for her, or for his position.

"Mrs. West lives in the neighbourhood of Eaton Square, in the region known as Pimlico. At the back of the house is a yard, and in this yard are four corners, and in each corner is a photographic studio; in addition to this there is a glass house on the roof, and fifteen dark rooms on the various landings. It is almost impossible to conceive the labour gone through by Mrs. West in the course of a day. About seven o'clock she takes her breakfast, and after reading *Town Talk* and the *Denbigh Daily*, sent her by Mr. W., she proceeds to her extensive wardrobe, and attires herself ready for the first photographic artist who happens to call. Jane—that is the name of her lady's maid—has strict orders to state that she is not at home to any one except Fradelle and Marshall or the Stereoscopic Company's young man. When either of these parties arrive they are taken into the front parlour and treated to a glass of something short, and conducted afterwards into one or other of the photographic studios. Sometimes each of all five of these rooms contains an operator at the same time, and Mrs. West rushes from one to the other in various costumes with a rapidity that is something marvellous. Her changes of costume are so quickly manipulated that any quick-change artist is completely 'out of the hunt.' Now in blue satin, now in red, then in green, next in white—she seems to be a kind of human female chameleon. Sometimes she is taken with a grin, occasionally with a leer; at times with a devotional aspect, and at other times quite 't'other.' Having been taken about fifteen times in as many new positions, the photographers are dismissed for a time, and Mrs. West rests after her laborious exertions, and having partaken of a light luncheon of hard boiled eggs, she dresses herself, and the brougham or victoria (according to the state of the weather) is brought round to the door, and she drives round to the various shops to collect her commission on the cartes-de-visite and the cabinets that have been sold during the previous day. I do not vouch for the truth of the statement, but I am informed that this little commission amounts to thousands annually; and the joke of the whole thing is that these pictures are purchased principally by 'cads,' who show the likenesses about to their friends, and oftentimes boast that they were given to them by Mrs. West herself; and I cannot say that I in any way pity the lady, for she lays herself open to this sort of insult.

"A woman must have come indeed to a low estimate of her womanhood when her vanity permits her to do this sort of thing. If Mrs. Cornwallis West had done any one act to make herself known as a good or great woman, if she were a heroine, or even a murderess, there would be some excuse in the traffic. When actresses get themselves taken it is excusable; when—are sold from the windows of our fashionable shops, it is understood that they are as shameless as they are goodlooking; but when a woman of position, such as Mrs. West, classes herself with the latter, she has only herself to blame if the casual purchaser considers her to be in 'the same street.' After having received her commission she returns home again to assume fresh positions, put on other costumes, and be taken backwards, full-face, and in profile.

"One of Mrs. West's greatest troubles is the fact that she is so out-phographed by Mrs. Langtry; and the knowledge that Mrs. L. has been illustrated by George Purkess in the *Police News* has excited Mrs. West to the very greatest extent. I have heard that George has been offered an enormous sum by Mrs. W. to enshrine her likeness among his roll of famous men and women, but I am afraid that he has been bribed by the other photographic professional beauty to give her the monopoly of appearing in his charming paper. I daresay that all my readers have heard the following quotation from the works of an unknown poet:—

"What is your fortune, my pretty maid?
"My face is my fortune, sir," she said."

This was evidently written in a prophetic vein, and the author must have had the Wests and the Langtrys in his eye. I am particularly requested to state that Mrs. West is not in any way related to Billy West, the stump orator. His wife's name is Emma, not Cornwallis. Mrs. Cornwallis West has a quantity of pets, all of which are appropriately named after the articles used in the trade in which she has embarked. For instance, her

collie dog is named 'Collieodion, her cat is called Iodide of Potassium, while the parrot is known as Camera Poll. The lady is so far devoted to the photographic art that after dinner she retires to her chamber, and has a silver bath preparatory to proceeding to the opera or one of the many aristocratic gatherings at which she is the reigning belle. Returning home late at night, she is met by one of the young men from Mr. Mayall's, and is taken in evening costume by magnesium light, after which she retires to rest."

Mr. Lewis went on to say.—When Mr. West saw the libel his first impulse was to go to the office and administer condign punishment, but on reflection he determined to drag the defendant before a court of justice as a criminal. When somebody waited on the defendant in reference to the libel he rubbed his hands in exultation, and said that he hoped they would bring an action against him, and half a dozen actions. He (Mr. Lewis) hoped that when the disgusting character of that wretched rag was known the wave of public indignation would surge in and sweep away the paper and all the parties connected with it, never to rise again. He would now call Mr. West, who would give an emphatic denial to the libel, and then he should ask for a remand.

Mr. William Cornwallis West said.—My town residence is 49, Eaton Place. I am Lord Lieutenant of the county of Denbigh. On Wednesday last, the 8th inst., I purchased a copy of *Town Talk* of the 4th of October. It appears by the imprint to be printed by A. Rosenberg. I have read the article "Mrs. Cornwallis West at home." That lady is my wife. Beyond the statements that I live at 49, Eaton Place, and that I am Lord Lieutenant of Denbigh, there is not one word of truth in it. So far from allowing my wife's photographs to be sold, I and my solicitor have taken every step to prevent that being done. There are no photographic studios in my house. There is not a glass roof to it. I never had a photographic apparatus in my house to my knowledge.

Mr. Williams then stated that for a long time past a series of libels had appeared in *Town Talk* referring to Mr. and Mrs. Langtry, who lived at 17, Norfolk Street, Park Lane. The libels that had been published against them were the most wicked, foul, and venomous tissue of falsehoods that had ever been put into print.

Extracts were read from *Town Talk* alleging that an application for divorce had been made by Mr. Langtry, and then withdrawn. Mr. Langtry said there was no truth in the assertion.

Ultimately the defendant was remanded until Wednesday. Two sureties in £500 each and himself in £1,000, in each case, were asked for, but were not forthcoming, and the defendant was removed to the cells.

Correspondence.

REMOVING HYPOSULPHITE FROM PRINTS.

SIR,—Allow me to bring before the professors of the "black art" the following cure for their troubles about getting hypo out of their prints. The remedy (the invention of Dr. Mastermann) is so ridiculously simple that one only wonders it was never found out before.

A solution of hypo, being of greater specific gravity than water, will naturally fall to the bottom, and remain there. On this fact the system is based. Make a sieve out of a wooden hoop (a cheese box top is as good as anything) by stringing cotton or linen thread from tacks or wire loops from side to side at intervals of one and a-half or two inches apart. Upon this sieve place the prints to be washed; place prints and sieve on the top of a vessel or bath big enough to receive them. The sieve will float an inch or two above the water, and the paper will lie on the network of the sieve. That is all. The prints left for twelve or twenty-four hours will wash themselves, and the most delicate test will fail to find any hypo in the paper after that period.

Be careful not to shake the bath, which should be of rain or distilled water, as the hyposulphite which has left the prints is lying at the bottom of the vessel.—Your obedient servant,
G. W. HIGGIN.

PHOSPHORESCENT SULPHIDE OF CALCIUM.

DEAR SIR,—It may interest your readers to know that the phosphorescent sulphide of calcium with which we have lately become familiar in this country is exceedingly rich in actinic rays after exposure to light. A strip of paper coated with the sulphide and exposed to sunlight for five minutes, when brought into the dark room acted as quickly and energetically against a Swan gelatine plate as an ordinary gas fish-tail burner. An exposure of thirty seconds face to face with the sensitive gelatine film produced a deep image.

Niepee St. Victor, it may be remembered, proved that white earthenware and other similar objects absorbed light and were capable of radiating it again in a similar manner upon a sensitive photographic film, but the action in the case of the phosphorescent sulphide of calcium is of course very much greater. I hear that it is the intention of a French firm to manufacture lanterns covered with this material which will shine by means of light that has been previously absorbed. So sanguine are many as to its phosphorescent capacity, that it is to be tried for illuminating coal mines.

Swift's *Savan* in the Island of Laputa was occupied this time in extracting rays of light from cucumbers would have found plenty to do in manipulating this new form of sulphide of calcium.—Faithfully yours,

H. BADEN PRITCHARD,

General Photographic Establishment of the War Department,
October 15th.

Proceedings of Societies.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE Annual Meeting of the above took place at the Museum, Queen's Road, on Wednesday, October 1st, Mr. T. DAVEY in the chair.

The minutes of the previous meeting having been passed, Mr. Munro was elected an ordinary member of the Association.

The HON. SECRETARY then read a letter of resignation from Mr. P. J. Worsley, one of the Vice-Presidents, who regretted having to take this action on account of his inability to find time for filling the post to his satisfaction.

Regret was expressed at the loss of one so universally esteemed, and it was decided to request Mr. Worsley to become an hon. member.

Mr. H. A. H. DANIEL then suggested that probably Col. Biggs would accept the vacant Vice-Presidentship.

Mr. E. BRIGHTMAN proposed, and Mr. G. A. POWELL seconded, the resolution that Col. Biggs be invited to accept the post of Vice-President rendered vacant by Mr. Worsley's resignation.

The HON. SECRETARY then read the Annual Report as follows.

Annual Report.

"The time has again arrived for your Council to present the report for the past year, which it does with a certain amount of pleasure. Some valuable members have been elected during the past session, and although the number of new members has not reached that of last year, still the total strength of the Association more than keeps up, which must be a subject for congratulation.

"The following papers and communications have been contributed by various members:—'Notes on Staining Gelatine Films,' by Lieut. Lysaght; 'Exhibition of Woodbury and other Lantern Slides,' by various members; 'On Causes of Insolubility of Carbon Tissue,' by Mr. E. Brightman; 'Lantern Exhibition,' by various members; 'A Few Practical Illustrations of the Value of Photography in Law and Medicine,' by Mr. R. Biggs.

"Your Council has to report that some alteration in the rules of the Bristol Museum having taken place, the subject of the place of meeting will require consideration.

"The monthly meetings have been fairly attended, the number present being nearly the same as last year.

"Your Committee regret that two of the out-door meetings could not take place on account of many of the members being from home; but consider that the attendance at the two which were held was a material improvement on last year.

"The financial position of the Association is satisfactory.

"Your Council desires to again reiterate the desirability of every individual member doing his utmost to advance the interests of the Association, both by finding new members and otherwise, and at the same time to thank those members who, during the past session, have contributed to the instructiveness and enjoyment of the meetings by their valuable papers."

Mr. G. F. POWELL proposed, and the CHAIRMAN seconded, the adoption of the Report.

Mr. H. A. H. DANIEL then brought forward the subject referred to in the notice of the meeting, viz., an International Photographic Exhibition to be held by the Association at Bristol. He reminded those present that a year ago the question was fully discussed, and it was decided that provided certain matters could be arranged, such an exhibition was desirable, but that the final decision be deferred till the following year. At the earliest possible moment, therefore, he desired to bring the whole question before them. They would recollect the Bristol Academy had been placed at their service on very advantageous terms. He had mentioned the subject to a number of photographers in different parts, and had found the matter thoroughly welcomed, and he felt sure that very little doubt need be entertained as to the ultimate success of the undertaking.

The CHAIRMAN then inquired whether any rough computation of the necessary expenses had been made, so that guarantees for that sum might be got.

Mr. DANIEL replied that such had been done, and it might be well to reconsider the items.

Mr. E. BRIGHTMAN then stated what, as far as he remembered, the total amounted to when the matter was considered a year ago; the entire subject was generally discussed; after which

Mr. H. A. H. DANIEL said he had come prepared with a resolution that he would at once propose, viz., "That subject to the necessary guarantee being obtained, an International Photographic Exhibition on a large scale be held at the Academy, Queen's Road, in 1880, immediately following the London exhibition."

Mr. E. BRIGHTMAN said he had much pleasure in seconding the resolution as proposed by Mr. Daniel, and doubted not that with everyone's best endeavours the exhibition would be a success.

The HON. SECRETARY then explained the new rules of the Bristol Museum as to meetings, and it was decided that he arrange with the committee for the Association's meetings during the ensuing session.

A vote of thanks to the Chairman closed the meeting.

It was understood that at the November meeting the negatives taken by various members at out-door meetings would be exhibited.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE ninth ordinary meeting of the above Society was held in 5, St. Andrew's Square, on Wednesday evening, October 1st, Mr. R. G. MUIR in the chair.

Messrs. Thomas Kerr, Matthew H. Speedie, Alex. Martin, and Lee were admitted members.

Mr. DAVIS read a paper "On Failures in Carbon Printing." In introducing his subject he stated that his object in writing the short paper was more with the view of getting than giving information.

The CHAIRMAN said that the Society was indebted to Mr. Davis in a great variety of ways, and his readiness to undertake duties that properly belonged to others who failed at the appointed time showed that Mr. Davies took a pre-eminent interest in the welfare of the Society. Mr. Davies had touched on almost all the failures in carbon printing. Concerning reticulation and allied troubles, he had often entirely removed or greatly reduced them by the use of methylated spirit, and he believed, for similar reasons, that it had been found of service in gelatine dry plates.

Mr. MATTHEW highly commended the use of alcohol in the production of gelatino-bromide negatives. He sometimes found it of advantage to use it in every stage of the process—the emulsifications, washings, developings, fixings and dryings.

Mr. TURNBULL remarked that by what he could gather from various sources, he believed carbon printing, except by the great commercial firms, was practically obsolete.

Mr. MOFFAT observed that with the most persevering care he still found he had to put up with ungovernable eccentricities in the carbon process.

Messrs. CRAIG-CHRISTIE and Mr. AIRD also took part in the discussion, and

Mr. DAVIES replied by answering several of the points raised, and, in answer to Mr. Pillans, he said that apart from the idiosyncrasy of the individual, if the hands were free from wounds, the bichromate was quite innocuous.

Mr. BRIGLEMAN exhibited an ingenious instantaneous shutter invented by himself, which was examined with much interest.

Mr. TURNBULL showed a dark slide constructed with paper, simple, efficient, cheap.

The SECRETARY laid on the table a large contribution of work executed by the Autotype Company; also a select contribution from the Platinotype Company. These pictures were for the Society's albums, and were remarkably fine samples of the various methods.

The SECRETARY was instructed to acknowledge the contributions, and to convey the best thanks of the Society for their valuable additions to the albums.

Votes of thanks to Messrs. Davies, Brigleman, and Turnbull, and the Chair, terminated the proceedings.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The Annual Meeting of this Society took place at the Memorial Hall, on Thursday, the 9th inst., Mr. CHARLES ADIN, the President, in the chair.

After the minutes of the previous meeting had been read and confirmed, Mr. W. J. CHADWICK, the Hon. Secretary, read the following

Annual Report.

"Your Council have much pleasure in presenting the twenty-fourth Annual Report of this Society.

"A retrospective survey of the past year shows that seven new names have been enrolled upon the list of members as against ten resignations which have been tendered and accepted, and the total number of members of your Society now is sixty-seven, all told.

"We regret to have to state that, notwithstanding the very attractive character of the proceedings at the various meetings of the past session, there has been a diminution in the number of attendants as compared with last year. We notice the attendance stands in the proportion of 29½ as against 33.

"The February gathering, which was styled an 'extra' meeting, proved a success in every sense, and might be called the evening of the session. Amongst the subjects that have been laid before you was an address from the President and six papers. This in itself is suggestive of an advancement of the right kind, and something ahead of other years.

"The following is a *resumé* of the various communications to the Society during the year:—

"'Negatives and Artistic Photography,' by Mr. C. Adin; 'Combination Printing for the Stereoscope,' by Mr. S. H. Ashley Oakes; 'W. J. Chadwick's Duplex Lamp,' by Mr. M. Noton; 'Reminiscences of a Photographic Trip to Germany,' by Mr. J. Amble; 'Patents in Connection with Artificial Light used in Photography,' by Mr. W. J. Chadwick; 'Collodio-Bromide Emulsion Process,' by Mr. W. B. Wood; 'Photographic Societies,' by Mr. W. J. Chadwick.

"In addition to the foregoing, we are indebted to various gentlemen for the exhibition of many interesting and ingenious apparatus used in and connected with photography, and also for the display of certain photographic results and specimens of our art, amongst which we might particularly name—

"The ingenious clock dial for attracting the attention of the sitter, contrived by Mr. A. Brothers, who also, in connection with several other gentlemen, experimented with the magnesium light for photographic purpose. To Mr. J. W. Leigh is due the credit for having brought several fine specimens of landscape photographs, and a silver-print washing box, as well as a very simple back-pressure valve. Mr. Knott is remembered for having exhibited a duplex glass for the flame chambers of the sciopticon, and also some silver prints exposed and printed by the electric light. Mr. H. Garside also exhibited some prints produced under similar conditions to those just mentioned. Mr. G. Gregory has brought before you many charming portraits and a few hand sketches. Mr. Watts displayed and described a novel electric battery, which he had contrived to fit inside the sciopticon, for use with that instrument for scientific projections. Mr. James Young showed a transparency on a gelatine plate, printed by the light of the moon. Mr. J. Pollitt exhibited an excellent photograph of an interior taken on a wet plate by the aid of the electric light.

Mr. W. G. Coote has upon more than one occasion brought before the members his excellent landscape photographs, both in prints and negatives. Mr. T. J. Chapman sent a novel tripod. Mr. G. A. Brooks ably conducted a lantern exhibition of slides prepared by the members, and also other slides at the extra meeting. Mr. W. J. Chadwick sought attention to the operation of the oxycalcium lime-light apparatus, invented by Canon Beechey thirty years ago for dissolving with one light only; a duplex lamp for the sciopticon, using gas instead of oil; some fligrane pictures by Mr. Woodbury; a small biunial lantern and lecturer's outfit; a small camera made expressly for lantern work; a Woodbury photometer; several gelatine negatives, transparencies, and enlargements; and an instantaneous shutter.

In addition to the foregoing members we have to thank the following commercial firms for kindly lending their various specialities:—Messrs. W. W. Rouch and Co., for a novelty in cameras; The Sciopticon Company, for a new sciopticon; Messrs. Newton and Co., for an improved magic lantern; Messrs. Marion and Co., for rolling press and other novelties; Messrs. J. Avery and Co., for backgrounds; Mr. John Moule, for a pyrotechnic lamp; Messrs. Hermagis, for portable cameras; Mr. L. Warnerke, for tissue negatives.

We are also indebted to Mr. William Brooks, of Reigate, for a collection of beautiful lantern transparencies, enlargements, and two series of subterranean photographs; while in the name of the Society, as a body, your Council tender their grateful acknowledgment to the Edinburgh Photographic Society for the presentation of a beautiful photograph in carbon, and also to the Photographic Society of Belgium for their *Bulletin*.

After advertizing to these different features of interest which have characterised our proceedings, and despite the fact that the outdoor meetings were not made so much of as they might have been, your Council consider they have good grounds to congratulate the members upon the healthy tone which generally pervades this Society. It will now fall to the lot of our worthy Treasurer to lay before you the figures which go to build up our financial status.

The reading of the report was followed by the passing of the accounts, presented by Mr. W. G. Coote, the Treasurer, and a balance sheet was given to each member present.

The nomination papers were next passed round to the members for the election of officers for the forthcoming year, and whilst the ballot papers were being scrutinized, Mr. Joseph Greatrex and Mr. James S. Watson were unanimously elected members.

Mr. M. Noton (who was too unwell to attend the meeting) had sent a very good photograph of the new Bessemer telescope now in course of construction by Messrs. Galloway and Son, engineers, Manchester.—Mr. J. W. Wade exhibited a large number of very excellent landscape photographs, from gelatine negatives, with many instantaneous views amongst them.—Mr. G. A. Brookes exhibited a capital photograph by the Vanderwyld electric lighting method.—Mr. Scofield passed round several gelatine negatives developed in various ways, and characterised by a peculiar red colour, which he considered was caused by over-exposure. A discussion on gelatine plates followed, and various hints were thrown out by some of the members.—Mr. J. W. Leigh exhibited a large number of 11 by 9 prints from collodio-albumen negatives, taken during the past year and developed by the alkaline method. These secured universal admiration, and great surprise was expressed when Mr. Leigh informed the members of the short exposures he had given—in some cases not more than five minutes, even to subjects embracing moderately dark foliage.

Mr. G. GREGORY said he had a very curious enlargement to show. It was a gelatine negative, the film of which, having become loosened from the glass, had expanded, but the image was perfectly sharp, notwithstanding.

Mr. T. CHILTON, Mr. J. SCOFIELD, and the SECRETARY said they had experienced the same effect many times.

Mr. GREATREX inquired as to the origin of spots in two gelatine negatives he had brought to the meeting, and was informed that they were caused by damp.

The result of the ballot was then announced as follows:—

President—Mr. Charles Adin.

Vice-Presidents—The Rev. Canon Beechey, Mr. Alfred Brothers, Mr. John Chadwick, Mr. J. W. Leigh, and Mr. N. Wright.

Council—Messrs. G. A. Brookes, T. J. Chapman, Arthur Coventry, George Gregory, Thomas Heywood, G. T. Linn, John Pollitt, John Scofield, W. B. Wood, and James Young.

Treasurer—Mr. W. G. Coote.

Honorary Secretary—Mr. W. J. Chadwick.

A hearty vote of thanks was passed to the late officers for their valuable services, and also to the gentlemen who had contributed to the enjoyable meeting that evening.

PHOTOGRAPHIC SOCIETY OF IRELAND.

The monthly meeting was held at the Queen's Institute, Dublin, Wednesday, the 9th of October, 1879, Mr. GEORGE MANSFIELD in the chair.

The minutes of the previous meeting having been read and confirmed, two new candidates for membership were proposed for ballot at next meeting.

Mr. JOSEPH WOODWORTH explained the making of microphotographs, of which he exhibited a very large number of prints, with the aid of Mr. J. V. Robinson. A number of transparencies of microscopic objects were shown on the screen, and were the subject of much interest and admiration.

Subsequently Mr. ROBINSON exhibited a number of different views in the lantern with the object of encouraging amateurs to work small sizes, with the idea of making use of the lantern for their exhibition.

The triplex lantern used on the occasion was much admired for its great convenience combined with efficiency.

The changing box of Mr. GEORGE HARE having been exhibited, the meeting adjourned until Wednesday, 12th November, which is the date of the Annual General Meeting.

Talk in the Studio.

SECOND-HAND APPARATUS.—We have received from Messrs. Hunter and Sands an interesting catalogue of their stock of second-hand lenses and apparatus, generally by first-class makers. All readers contemplating adding to their stock of appliances will do well to consult this catalogue before purchasing.

LENSES—CAUTION!—We have once again to call the attention of our readers to a risk to which they are subject at present in purchasing second-hand lenses, which, by care, they may easily avoid. There are in circulation at present a number of imitation Dallmeyer's, which are dangerously like the originals in outward appearance. As we have before announced, Mr. Dallmeyer will willingly examine and certify any lens of his own manufacture, at any time after it has originally left his hands, hence no risk need be run; but it will be wise to submit second-hand lenses to his inspection before buying.

PHOTOGRAPHING FAINT SPECTRA.—A correspondent of the *Newcastle Weekly Chronicle* says:—"It may be remembered that in discussing Dr. Draper's researches as to the presence of oxygen in the sun, I had occasion to mention that, in his opinion, the extreme limit of dispersion had been obtained, so that no more delicate tests could be applied to the comparison of the oxygen bright lines and the bright bands in the solar spectrum which seem to correspond with them. Dr. Draper was probably quite right, so far as the question of the brilliancy of the oxygen lines was concerned. But Herr H. W. Vogel has devised an arrangement by which the photographs of very faint spectra can be obtained. He effects this by using the so-called gelatine dry plates. These are remarkable for their extreme sensitiveness, which Herr Vogel has estimated as fifteen times that of the ordinary wet plates. They remain good for years, and are already obtainable in the trade. Herr Vogel, using these, has succeeded in fixing the spectra of the little oxygen tubes prepared and studied by Herr Paszow, thus rendering visible lines beyond the violet end of the spectrum—not observable by direct vision. It is manifest that any increase in the sensitiveness of the plates used for photographing spectra is practically equivalent to an increase in the brightness of the spectra, and when the limit of brightness has already been reached, it is by increasing this quality in the photographic plates that further dispersion can alone be employed. So that although—to refer to one research alone—Dr. Draper may be unable with the plates at present in use to increase the dispersion of the oxygen spectrum which he compares with the solar spectrum, he may with the gelatine dry-plates increase the dispersion ten or fifteen fold, and correspondingly increase the significance of the agreement between the oxygen bright lines and the solar bright bands. Moreover we may perhaps find in this increase of sensitiveness the means for determining the presence of other solar elements than those Dr. Draper has dealt with by the photographic method.

To Correspondents.

J. M.—Different prices are charged by different houses, varying from 1s. to 2s. 6d. Perhaps from 1s. 6d. to 2s. may be an average.

G. WEBBER, JUN.—The slides must of course be made to fit the groove in the lantern; or you may possibly make a contrivance to hold a larger plate. It will be better, however, to place a mask over the plate to reduce the portion shown. The size of the condenser really regulates the size of the transparency, for if the plate be too large, only a portion of it will be illuminated. You need not, however, cut down your 5 by 4 transparencies.

A. E. SMITH.—As you must know, we cater for many and varied tastes, and we assure you that they are not all of your complexion. We are always, however, obliged for a candid opinion.

AMATEUR.—We do not know of any process whereby a photograph can be converted into a printing block to print with type. There are two or three proposed methods, but they are as yet on their trial. One of the best methods yet known is as follows:—Take a photograph of the required subject and fix without toning. Now proceed to work upon the print with indian ink, converting the photographic shading into line and hatching. This done, take a negative of the print so treated, and then proceed to take a relief by means of bichromated gelatine by one of the methods which have been often described. If you cannot manage the method here indicated, you can get the nearest approximation by Leitch's process, which will cost much less than wood engraving. 2. We have not seen any method described of transferring a gelatine negative. To produce such negatives for transfer, it would be desirable, we think, to give the plate a preliminary coating of collodion.

E.—We do not know where you could see the back numbers of the journal in question. 2. A tombstone epitaph is too grave a subject for making jokes upon.

C. H. EVANS.—There is no better plan of converting an old used up negative bath into one suitable for printing purposes than precipitating the silver, converting it into nitrate, and making a new printing bath. In our experience a doctored negative when used for printing involves many troubles, and the prints refuse to tone well.

BROMO.—You should have described the precipitate. No precipitate should be thrown down on mixing chloride of gold solution with acetate of soda. The slow toning seems to suggest the presence of some impurity.

W. W.—We prefer the results of the collodio-chloride process; but we have some doubts as to its fitness for the "smoothed" surface of the opal glass, if by that term we understand a surface ground but not polished. We have tried some samples of collodio-chloride on a ground surface, and the film split up on drying. The collodion film on a ground surface is resting on a series of points, the summits of small hills with valleys between, and if the film be of a contractile character, it is easily split in the portion over the valleys. A very powdery sample of collodion probably would not behave in this way; but it would be safer on a polished surface where the film is in perfect contact all over. We have not tried a chlorized collodion and silver bath; but we should not pay much heed to the authority you quote, as one of little practical weight. 2. In fixing the plate may remain at rest. 3. We prefer the quality of the pyro developed negative, and should not wish to tone them; but we should think it would be quite possible to do this with chloride of gold. 4. We believe there is tolerable uniformity of light and brilliancy; but we cannot state that it is absolutely constant, as occasional faults in the wire or ribbon at times cause a little irregularity. The fumes may be carried off, we believe, by good management: how far it is easy we cannot with certainty say.

A REGULAR SUBSCRIBER.—For card portraits your No. 1B and a quarter-plate camera will answer much better than the large camera and lens of long focus. The quick-acting No. 2 Ross will also answer well. 2. It depends upon which kind of dry plate you use. For collodio-bromide or gelatine the alkaline developer is best.

LAUDER BROTHERS.—We regret that we have not the address of Professor Krippendorff, and hence cannot forward the letter. His article appeared in one of the Continental journals.

TRANSFER.—The black or bronzed and opaque effect in developed collodion images is due to under-exposure and over-development. Whenever the development is slow, and requires to be pushed far, detail in the shadows is apt to be buried and invisible by reflected light. Full exposure and rapid development are very important in securing good results in producing collodion prints. Warm tones are best secured, also, by full exposure and quick development. Your formulae ought to yield good results. A good light is very important. Good collodion prints cannot be produced in a dull light.

CAPTAIN TURTON.—We will write shortly. Several correspondents in our next.

The Photographic News, October 24, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

A NEW IMPERIAL OBSERVATORY—TWENTY THOUSAND POUNDS FOR RESEARCH—A NEW FORM OF PORTRAIT—PHOTOGRAPHS OF THE KHYBER AND JELLALABAD.

A New Imperial Observatory.—The Astronomer-Royal for Scotland, Professor Piazzi Smyth, has made a very good suggestion: he proposes that some good should accrue to scientific men from our occupation of Cyprus. The clear atmosphere and sunny climate of the island renders the locality peculiarly appropriate to the establishment of an observatory, and Professor Smyth proposes that Government should be urged to undertake the work. It would be an Imperial Observatory, and its records would be available to those living in Great Britain as to other inhabitants of the empire. There is certainly a good deal of wisdom in the suggestion. We are much in want of a post of observation to supplement that at Greenwich; in fact, Mr. Smyth humorously wouders how astronomers can possibly exist in such a dull climate as England. Photographers, especially during the past year, have no need to be told how rarely the sun makes its appearance among us near the metropolis, but if there were any doubt about it, the Astronomer-Royal's records of sunshine at Greenwich, which are regularly published, would supply the information. At this time of the year, indeed, murky skies, especially towards evening, are the rule and not the exception, and of all places in the world Greenwich is about the worst, one would think, for making astronomical observations. The vast factories in the neighbourhood, with their tall chimneys belching forth the blackest of smoke, let alone the big steam colliers and shipping on the river, that pass up and down at the very foot of Greenwich Hill, all contribute to make the atmosphere thick and hazy. The sun's disc looks as round and red sometimes as if you were looking at it through smoked glass, and yet at Greenwich we profess to make the finest of observations, and our staff of astronomers there are provided with the most delicate of instruments. Surely it is high time we had our principal observatory in some more eligible situation; and we consider that if a supplementary establishment could be provided, moreover, at Cyprus, it would, indeed, furnish valuable results. We could not do at Greenwich anything approaching the work conducted by M. Janssen at Meudon. His pictures of the sun, taken in the space of $\frac{1}{1000}$ and $\frac{1}{2000}$ of a second, which have created a sensation among astronomers, could not be produced at Greenwich, with all the clever staff and perfect instruments that we possess. The hazy atmosphere would prevent the use of the astronomical camera two days out of three, and the disc pictures produced would never be so perfect by reason of the risk of accidental defects that would be produced by the thick vapour upon the photographic film. On the other hand, a photo-astronomical observatory erected in a clear bright climate like that of Cyprus, on one of the slopes of Mount Olypus, would undoubtedly be of singular value. We remember seeing, some time ago, a series of photographs obtained by Dr. Hermann Vogel on Mount Etna, when that gentleman was engaged some time since with a British scientific expedition in the Mediterranean, and the clearness of the atmosphere in this case was very striking. With such opportunities at our disposal, it really does seem strange that we should even attempt to take astronomical observations, whether optical or by means of the camera, within the halo of a great city like London.

Twenty Thousand Pounds for Research.—For a fourth time the Royal Society will take upon itself this year the task of dividing the sum of £4,000 among investigators, as an encouragement or payment for research. Government, it appears, has decided that the sum shall be paid for five consecutive years, and at the end of that time a further

consideration will be given to the subject. Thus the end of this year and end of the next are the only opportunities that yet exist for the reward of researchers, and those, therefore, who have claims, real or imaginary, and have, perhaps, a little interest besides, will do well to come forward at once. The first question that will necessarily occur to our legislators at the end of the term, when £20,000 have been expended, is, what have we got for the money? Will it be worth while to spend another £20,000 to secure the same results? No doubt those who have awarded, and those who have received, the grants, will be of one mind, and be quite ready to go on again, since it is both pleasant to have patronage to bestow, and to be recipient of a money windfall. But it will be difficult, we suspect, to show that the money for the most part has got into the hands of those for whom it was intended, from the fact that needy investigators are just those who are kept in the background and have a difficulty in making themselves heard. From a perusal of the list of recipients, they appear to be well-to-do chemists, physicists, and the like, who enjoy tolerable incomes, but to whom doubtless an addition of two or three hundred pounds has not been unwelcome. They will be found, too, with one or two exceptions, to be men of quite mediocre capabilities, who have never done anything beyond ordinary work, and are never likely to. Under these circumstances, possibly, other professional men in the country may ask that their turn should come, and that a yearly grant of £4,000 should be given for the encouragement of literature, the drama, &c. We have no doubt at all that there would be plenty in other walks of life quite ready to receive an addition to their income, and quite as capable of doing work *pro bono publico*, as any professional researchers.

A New Form of Portrait.—A new form of portrait claims attention at the Exhibition under the name of panel portrait. The style looks something like a tall cabinet, and, if we mistake not, is somewhat similar to the promenade portrait which Mr. Valentine Blanchard brought before the public some years ago. The panel portrait may be very excellent for panels; but we should hardly think that for an album, or even for an accepted form, it is desirable. A tall lady in a long dress, in which the latter is to play the principal rôle, may be well suited in a picture of these elongated dimensions; but the panel is hardly adapted for anything else. At the same time, we believe an incentive might just now be given to photographic portraiture by the introduction of a fresh style, and for this reason we could not criticise too harshly attempts in this direction. The cabinet picture is now so firmly established, that it has, much to the interest of photographers, elbowed the carte rather on one side. Cabinet albums are now to be seen on drawing room tables as frequently as the carte album, and it would be well indeed if photographers could start some equally favourite form of novel dimensions. But the matter is difficult, from the fact that fashion has a good deal to do with it, and, like other novelties, you depend a good deal upon the Royalty and the Upper Ten for popularity. Cannot our Royal photographers do something to aid in the matter?

Photographs of the Khyber and Jellalabad Pass.—It is interesting to find the Khyber Pass, Jellalabad, and other places connected with the Afghan campaign on view at the Exhibition just now. They have been added, we hear, through the kindness of Lieutenant Darwin, the honorary secretary, and constitute at this moment one of the greatest attractions. They were not exhibited on the opening day, and hence escaped a notice from the press, otherwise we feel sure that numerous visitors would have flocked to see them. But why not remedy this defect at once? An announcement in the papers, by advertisement or otherwise, should certainly be made of this strong point of the Exhibition, and would add greatly to the popularity of this year's gathering.

FRENCH CORRESPONDENCE.

PROPOSED FORMATION IN FRANCE OF A GENERAL GUILD FOR PHOTOGRAPHY—IDEA FOR ESTABLISHING A BOND OF UNION BETWEEN THE PHOTOGRAPHERS OF ALL NATIONS—DRY COLLODION PROCESS OF M. FABRE, OF TOULOUSE—FURTHER REMARKS ON THE PROCESS OF OBTAINING A PHOTOGRAPHIC IMPRESSION THROUGH PERMEABLE PAPER—VAN MONCKHOVEN'S PHOTOMETER FOR THE STUDIO.

A General Guild for Photography in France.—At the last meeting of the *Chambre Syndicale de la Photographie* the subject of extending to all photographers throughout France the benefits of a trade society was much discussed. It was felt that the plan of making use of the machinery of the Association itself would be checked by the want of the necessary adhesions, as the number of its members scarcely amounts to thirty. Up to the present, the different photographic societies have, in conjunction with this Association, represented, either individually or in combination, the general interests, as well as those of a purely trade character, of the whole photographic body. But, of course, now that the photographic industry has received so wide a development, and one which is still further increasing from day to day, it becomes necessary to establish a perfect and well-marked line of distinction between photographic societies whose special object it is to encourage and note the technical progress of our science, and the *Chambre Syndicale*, whose action is more particularly limited to the promotion, defence, and amelioration of the professional and purely commercial interests of photographers generally. There is, therefore, no reason to feel surprised that the latter Association has not drawn to itself more adherents, nor that the idea of extending its sphere of operations has not been previously entertained. To confess the truth, our art is not so ancient as to make it remarkable that it has not yet compassed a commercial organization so complete as the trades of wholesale and retail grocers, of goldsmiths, of drapers, &c., for all of which trade societies were formed centuries ago, and developed into complete corporations, each with its own officers and governing body. The few questions of detail which must be settled in order that the whole of the photographic body in France may be properly represented by a central guild elected from among its members form only a secondary consideration; it is a matter of principle rather than of any particular means more or less open to discussion. In fact, the opinions of all those interested in the subject are perfectly unanimous on the question of principle, and soon we hope to welcome the project itself on the high road towards realization.

But why should there not be an International Photographic Union?—This is a question which faces us directly we inquire what still remains to be effected to perfect an organisation at home, though an allusion to it at the present moment may, perhaps, to a certain extent, be premature. Since, however, the idea has arisen, it will not be going much out of the way to say a few further words about it. They may be like a handful of seed thrown at haphazard into the air; it is possible that a few grains will fall on fertile soil, and that we shall later on find trees growing on a spot where formerly nothing grew or flourished. In the same way, the idea having been once let fall, we may, perhaps, at some future time, see a Photographic Union in full operation, just as we have now a Postal Union embracing a large number of countries; or again, as Conventions have at different times been established for organising a common monetary system, and for the unification of weights and measures. An international organization of photography—or, to speak more correctly, of the photographic body—might well be effected to the great advantage of our common interests, and there ought to be no difficulty in setting it going. First of all, we, here in France, must put our own house in order, and when these arrange-

ments are complete, we shall be able to bring our forces of cohesion to bear on the realization of my idea with all the greater momentum, and to appeal with energy to other countries in aid of the formation of an International Congress of the whole world of photography. Then we should be able to develop to the best effect all the advantages which our beautiful art could devise from such a bond of union, and photography would be called on to play a part continually increasing in importance in its numerous applications to industry. But I fear I shall soon lay myself open to the charge of being a scheme-monger if I keep starting new projects and am continually prophesying for the future, instead of making my readers acquainted with the facts of the present, which would probably be more in their line. Will they excuse me on the plea that what I am engaged in sowing, they may, it is hoped, be called on to reap? Already many of the ideas struck out by me have been successfully put into practice by others; it is because I believe in the future of certain processes and of certain inventions that I describe them as freely as if I were painting from nature, just as if I were present at the realisation of the idea the definite proof as to whose capability has still to be brought forward. But, at any rate, for to-day we have had enough of dreams—and now to facts!

Dry Collodion Process of M. Fabre.—In the last number of the *Bulletin* of the Photographic Society of France (that of October) I have just read a note communicated to the Society by M. Fabre, the worthy secretary of the Photographic Society of Toulouse, to enable him to take part in the dry process competition. By the terms of this competition a prize was offered "for a preparation which, while possessing the greatest durability, should, when flowed over glass or any other lighter and less brittle support, yield a film equal in sensitiveness and completeness to that of wet collodion." M. Fabre appears to have confined himself as closely as possible to the conditions of the competition. The following are the different preparations which he describes:—

Collodion.—Alcohol at 40°	...	500 cub. centim.
Ammonium iodide	...	20 grammes
Cadmium bromide	...	10 "

Dissolve and add—

Pyroxyline in powder 32 "

Afterwards, when the pyroxyline is absorbed, add by drops, with continual shaking:

Sulphuric ether at 60° ... 500 cub. cents.

When it is well settled, decant, and add to the portion which is to be sensitized, about an hour before pouring it into the dish, 5 drops of glacial acetic acid to every 200 cub. centim. of collodion; then shake up well. The collodion is then poured out into a porcelain dish, and allowed to evaporate, when a skin will soon form on the surface; this must be broken down, and mixed with the still viscous mass of collodion by means of a glass rod. At length the collodion sets into a firm jelly, and, when it no longer sticks to the fingers, the silver bath is applied. This consists of—

Silver nitrate	...	120 grammes
Distilled water	...	1000 "

Then add a ten per cent. solution of ammonium iodide in alcohol, sufficient in quantity to produce a precipitate of silver iodide, which does not re-dissolve on shaking. Proceed now as in the ordinary emulsion process. Washing is effected by a special method, in which the distilled water is renewed several times, and then the following preservative is introduced in contact with the emulsion:—

Water	...	1000 grammes
Tannin	...	80 "
Phenic acid	...	1 gramme

to which, after filtering, are added 60 cub. centim. of alcohol of 40°, and the liquid is again filtered. After this contact the emulsion is dried by small quantities at a time in a drying oven at a temperature of 40° C., and it should be

noted that a moderate heat increases the sensibility. The final emulsion is made by putting 15 grammes of dried emulsion into a flask and covering it with 80 cub. centim. of alcohol at 40°, in which is dissolved a gramme of tannin; the latter must have been dissolved in water, carefully filtered, and then crystallised out. After standing for a couple of hours 100 cub. centim. of ether at 60° are added, and the whole is thoroughly shaken; then about 75 cubic centim. of normal collodion added. It is again shaken several times, and may be used in about three or four days.

Support.—The best support is paper coated with a thick film of collodion, and varnished with caoutchouc after Warnerke's method; gelatine steeped in alum may be substituted for the caoutchouc. The paper is first coated with thick 3 per cent. collodion containing 1 per cent. of stearine, and when this film is dry it is again coated with the alumed gelatine, according to the formula of M. Jeanrenand. On this film the emulsion is flowed. Before treated with these various preparations the paper must first be moistened, and then stretched over and glued by its edges to a glass plate of convenient size; when the emulsion is dry the paper is detached and enclosed in a cardboard portfolio.

Development.—According to M. Fabre, any developer may be used in his process, but he describes a new method of developing which should be very serviceable in travelling. The plates are placed one over the other, separated by pieces of blotting-paper which have been kept for some days in a box containing ammonium carbonate. After the emulsified paper has been in contact with the blotting-paper for five or six minutes it is breathed on, or, better still, it is suspended over a basin of water at a slight distance from the surface of the latter, when, provided the preservative contains tannin, or gallic, or pyrogallie acid, the image will very quickly appear. If it contains none, the image will seldom become visible, but the operation serves to retard the development. M. Plucker was the first to point out this action of ammonia; the use of the filtering paper is very convenient. The above is a resume of M. Fabre's dry collodio-emulsion process. I have been able to give no more than an abstract, which in a letter of this kind must necessarily be a short one. It remains to be seen whether the gelatino-bromide of silver preparations cannot effectively be substituted for those delicate and complicated washed emulsions. There is, however, in the Fabre process much to be learned to the advantage of photographic science.

Printing through a Permeable Paper.—If I once more recur to the application of the *Papyrograph* to photography it is because I believe that in it will be found a really valuable means of effecting photo-mechanical printing. In place of gelatine, it would be better to use bichromated albumen, and to apply the positive, which may be either a photograph or a drawing by hand, to the reverse side of the thin prepared paper, and in this way to expose it to the action of light; a half-tissue paper would answer the purpose very well. After a sufficiently long exposure, the prepared paper should be placed in cold water; the latter would dissolve all the parts that have not been acted on by light, and the paper in those places would remain permeable. By proceeding thus, very clean pictures could be obtained with great facility. The solution for preparing the paper might be made thus:—

Dried white of egg	...	...	25 grammes
Common water	...	...	100 "
Ammonium bichromate	...	...	3 "

The paper should be coated only on one side, and the non-coated side should be exposed to the negative. Inks and colours for printing may be prepared in an infinite number of ways.

Dr. Van Monckhoven's New Photometer.—In my last letter, published in the PHOTOGRAPHIC NEWS of the 26th September, I gave a brief description of the new photometer invented by my friend Van Monckhoven. The action of this instrument, as I then stated, depends on the decom-

position of a solution of uranic oxalate, which is converted by the action of light into the corresponding uranous salt. The volume of gas resulting from this decomposition is exactly proportional to the intensity of the light. As the estimation of any quantity of gas is a very delicate operation, Dr. Van Monckhoven has contented himself with measuring the height of a column of liquid maintained by the pressure of the gas—or, rather, produced by the gas taking the place of a quantity of liquid at the top of the flask—while the liquid thus displaced is driven into and ascends in a graduated tube. I have, without any difficulty, verified the statements of my eminent colleague. The preparation of the uranic oxalate is easily managed, and the clear directions that he has given facilitate all the other details of the manipulation. Even where the light is weak and diffused, its action upon the solution is very visible. I have only been able to arrest it by placing the instrument in absolute darkness. I have found the use of a bottle with two necks preferable to that of the ordinary flask; the second neck is stoppered with an imperforate india-rubber cork, by removing which the gas that has accumulated at the top of the bottle can be allowed to escape, and by pressing more or less on which the column of liquid in the capillary tube can be made to stand at a fixed point, being the standard from which the gradation commences. It seems quite clear that by means of this instrument, at any time of day and with any kind of weather, cloudy or fair, the intensity of the light may be determined by reading the number of units of length that the column of liquid rises in a certain unit of time. My own experience is, that the unit of length should be a millimetre, and the unit of time a minute; but in order that experiments made in different laboratories may be capable of being compared one with another, it will be necessary to use instruments that are perfectly identical both as regards the capacity of the flasks and the calibre of the tubes; or they may be graduated in the same way as is done with ordinary thermometers. There yet remains, however, to be determined how the same apparatus behaves at the end of a certain time—after, that is to say, the standard of the uranic oxalate solution has been lowered by decomposition. This point I am now engaged in investigating, and in my next letter I will state the result of my inquiry. I attach so much importance to this subject that I am taking great pains to study it in all its bearings, and I shall not fail to lay the fruit of my researches before the readers of the PHOTOGRAPHIC NEWS.

LEON VIDAL.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.

THE DISSOCIATION OF THE ELEMENTS—CHLORINE A COMPOUND BODY—THE DIFFERENT CONDITIONS OF BROMIDE OF SILVER AND THEIR RELATION TO EMULSION—MONCKHOVEN'S RESEARCHES.

WE are living in a time of strife and schisms. The political world was always embroiled in some kind of wrangle or dispute, but now it seems the chemical circles are even more disturbed and divided.

Lockyer goes straight for the elements, and places their very existence in doubt. He speaks of "so-called hydrogen," "so-called calcium," as if the theory of the existence of those bodies was an exploded fable of years ago. Fortunately the great body of chemists are not so sanguine and revolutionary; they stick to their old elements, and will not be convinced of their being compound bodies unless more weighty reasons are advanced to sustain this assertion; and we therefore may yet feel at liberty to speak in photography of real iron and real silver, instead of "so-called iron" and "so-called silver." Of late, however, doubts have been raised as to the elementary integrity of another interesting photographic body—chlorine. It has long been a well understood fact that one volume of chlorine weighs 35.5 times more, and one volume of oxygen

weighs 16 times more, than one volume of hydrogen. Victor Meyer has now proved that with oxygen this relation remains unchanged, even when the gases are heated to 1,000° C. and more, while with chlorine it is otherwise. At 1,242° chlorine weighs not 35.5 times as much as hydrogen heated to the same degree, but only 23.6 as much, or two-thirds of 35.5. A similar fact is observed with iodine when heated, and this singular phenomenon gave rise to the oft-repeated, and—especially by Schoenbein—vigorously defended assertion that chlorine is a compound body—the oxide of a so far unknown stuff, murium. Victor Meyer treats this matter with extreme caution; he wants to gather more material, and will make further experiments, letting the chlorine, heated to 1,500° C., act through a diaphragm. More than this he does not say in his report to the German Chemical Society, but the busy newspapers, always ready to pounce upon sensational news, even of doubtful origin, already brought the report that Meyer had succeeded in dividing chlorine, obtaining oxygen thereby. The confirmation of this report has not come yet, but in case it should prove true, then all our old theories about the combination of many important photographic bodies must of needs be relinquished. I myself have some doubts yet in regard to the matter. If chlorine is decomposed already at 1,500°, it would with more reason yet be decomposed by the electric spark, the temperature of which is estimated to exceed 20,000° C.; and if thereby oxygen is set free, oxygen lines would be visible in the spark spectrum of chlorine; but of all this nothing can be observed. These experiments and observations seem to offer, so far, interesting points only to theorists, but similar theories have often exercised the greatest influence upon the practice. The whole manufacture of our aniline colours rests on a theoretical basis, and, according to Monckhoven's recent publications, photography begins now, too, to draw benefit from certain hitherto unnoticed seemingly only scientifically interesting facts, concerning the properties of brome-silver.

For the photographer there exists only one kind—or, chemically expressed, one modification—of brome-silver, but it is easy to show that brome-silver, as such, appears in many different conditions. When, for example, brome-silver is precipitated with an excess of nitrate of silver, a cheesy, dark-yellowish precipitation is obtained, while when treated with an excess of bromide of potassium or ammonium, the bromide of silver appears light yellowish and powdery, showing much less sensitiveness to light than the former precipitation after having been washed and dried. We have, consequently, two different modifications of the bromide of silver. But the celebrated Belgian chemist, Stas, who studied the combinations of silver with extreme minuteness, states that he did not find two, but six different modifications of brome-silver.

He makes distinctions between: 1, the spotted white; 2, the spotted yellow; 3, the powdery intensely yellow; 4, the powdery white, pearly; 5, the grained yellowish white; 6, the crystallized intensely yellow. Stas furthermore states that brome-silver, which was usually considered insoluble in water, is really soluble in water to a marked degree, at a temperature exceeding 33° C., when in a spotted or powdery condition. Unfortunately, Stas did not extend his researches to the relative sensitiveness to light of the different kinds of brome-silver, but recently Monckhoven has shown that that these various conditions which brome-silver appears in are a very important factor in the production of gelatine emulsion, which has of late become of so much importance. He states that in manufacturing brome-silver emulsion, at first brome-silver of a very inferior sensitiveness is obtained, which, however, through extended emulsification—i. e., through being kept liquid in a warm state—is changed into a much more sensitive modification. The object of emulsification is, consequently, to work a modification of the brome-silver.

Monckhoven tried to obtain this sensitive brome-silver

modification by a different process, as the protracted emulsification and washing is very apt to produce decomposition of the gelatine. He puts hydrobromic acid (H Br) to gelatine, shakes the same well with carbonate of silver, and thus is said to obtain the sensitive modification of brome-silver without having recourse to the long emulsification. Monckhoven takes so much hydrobromic acid as is necessary to precipitate 10 grammes of nitrate of silver, dissolves this H Br in 200 grammes water with 2.5 grammes gelatine. He precipitates furthermore 10 grammes nitrate of silver with carbonate of soda, and washes out the precipitated carbonate of silver with pure water. Upon this carbonate of silver he pours the acid solution of gelatine, shakes well, and lets the whole stand about twelve hours at 50° C. Gradually brome-silver is then formed, which is distributed equally all over the gelatine, and after adding 10 grammes of gelatine, the emulsion is ready, and it is not necessary to wash the same, as it only contains free hydrobromic acid, or free carbonate of silver, which, according to Monckhoven, does not matter. Monckhoven extols the sensitiveness of his emulsion, but, unfortunately, he fails to give all the necessary details, so that his process, in other hands, has produced less favourable results.

(To be continued)

HOW TO AVOID BLUE SPOTS ON ALBUMENIZED PAPER.

BY FRITZ HAUGE.*

It is well known that with paper recently albumenized the coat of albumen very often separates from the paper in the soda bath, or rather in the first wash-water, with the formation of bladders or hubbles. When prints of this kind are washed for a lengthened period, or if after short washing they are allowed to dry spontaneously, unsightly blue spots will appear at the places where the bladders had formed. These blue spots can, it is true, be averted by washing the prints as quickly as possible, then laying them between sheets of blotting-paper, and smoothing away the hubbles by a firm pressure with the hand. But, unfortunately, quick washing is accompanied by the danger of allowing considerable traces of fixing soda to remain in the prints, a danger which, in this case, is all the greater owing to the fact that the hubbles offer very convenient hiding places for the soda solution to retreat into.

I have, however, discovered that these blue spots can also be avoided by bringing the prints at once from the soda bath into one of water mixed with a little *eau de Javelle* (two dessert spoonfuls of the latter in a moderate sized washing bath is sufficient). From this they are removed into a second bath of the same kind, and are afterwards treated in the usual way.

The *eau de Javelle* is essentially a solution of potassium hypochlorite in water, and this solution has the property of decomposing one of sodium hyposulphite, or, as it is now written, sodium thiosulphate. Potassium sulphate, sodium chloride, and hydrochloric acid are found according to the following equation:— $\text{HO} + 2(\text{KO}, \text{ClO}) + \text{Na}, \text{O}, \text{S}_2\text{O}_3 = 2(\text{KO}, \text{SO}_3) + \text{NaCl} + \text{HCl}$. By the change thus effected the sodium hyposulphite is entirely broken up.

On this account the treatment of photographic prints with *eau de Javelle* for the purpose of quickly removing the hyposulphite of soda is generally to be recommended. Julius Kruger was the first to point out this property; afterwards G. Gunther and Dr. Stolze, and more recently G. Rotter and E. Duhy, drew attention to it. Unfortunately, this judicious adjunct to the operation of washing photographic prints has not been extensively applied in practice, partly, no doubt, owing to carelessness, partly to ignorance.

To prepare *eau de Javelle*, take one part of calcium chloride and lixivate with 12 parts of water; filter the ley, and mix

* Photographisches Wochenblatt.

into it gradually a solution of 1 part potassium carbonate in 4 parts water, so long as a precipitate is formed. It will be found that 120 parts of the calcium chloride ley requires about 20 parts of potassium carbonate solution. Instead of *eau de Javelle* may be used *caude Labarraque*; this may be prepared as follows:—1 part calcium chloride is stirred up with 12 parts water, and the ley decanted off. Another 2 parts of water is poured over the residuc, and again decanted off and filtered. The whole is then mixed with a solution of 2 parts crystallized soda in 4 parts water, and filtered.

PHOTOGRAPHY AND THE SUN'S SURROUNDINGS.*

Now, in one sense, the relations here presented are not new. The zodiacal light has been known from the time of Childrey, if not from that of Tycho Brahe. Mathematicians have long seen that it must belong to a solar appendage, rejecting utterly the doctrine advanced by some that it comes from matter travelling round our own earth. Again, the long coronal rays had been very confidently regarded by most mathematical astronomers, and, indeed, by all who had sufficiently studied the evidence, as belonging to matter near the sun. And though the zodiacal had never before been recognized during totality, and so the gap between the outermost coronal rays and the innermost part of the zodiacal seen during twilight had never been observationally filled up, yet the mind's eye of science had clearly discerned even that portion of the zodiacal. Still the recognition of the whole range of solar surroundings, in such sort that no question can any longer, it should seem, be raised as to their reality, even by those least able to follow scientific reasoning, cannot but be regarded as an important step. Many will now study eclipse phenomena with a new interest and a new purpose, who formerly supposed the theories of astronomers respecting the unseen parts of the zodiacal to be mere hypotheses, even if they were not wholly fanciful speculations. Many, in like manner, will study the zodiacal light as seen in morning and evening twilight with much greater care than heretofore. Its changes of extent, position, and lustre will now be seen to be full of interest. Whether they synchronize or not with the changes undergone by the corona, or with the varying extent and activity of the prominence region, or with the number and size of the solar spots, are questions of importance, to some of which we may hope to obtain an answer, seeing that in tropical regions, especially at elevated stations, the zodiacal (as Humboldt long since pointed out) is a conspicuous phenomenon. Whether during future eclipses the zodiacal will be traced further from the sun than by Langley and Newcomb in July, 1878, is not in reality a matter of much moment. The great point is that the zodiacal should once have been unmistakably recognized during total eclipse. That was all that was wanted to make the chain of evidence complete, even for those who cannot recognize the force of reasoning when it deduces from observation something more than was actually seen. Now that this is done eclipse observations of the zodiacal will not be wanted. They never could throw any light on the nature of the zodiacal light, except near the sun, where the long rays are. For at a distance of 6 deg. or 7 deg. from the eclipsed sun the light of our own atmosphere begins to show, obliterating the delicate light of sun-surrounding matter. As to the rays, now that their solar, or rather cosmical, nature is recognized, we may expect that they will be carefully studied. What their real nature may be is not easy to determine. That they indicate the existence of meteoric or cometic systems near the sun, as Professor Abbe believes, may be accepted as probable. Indeed, the only reasonable theory of the zodiacal is one which, as was shown nine years ago by Mr. Proctor, would lead us to expect to see

signs of meteoric streams where these rays appear. He wrote ("Treatise on the Sun," 1st edition, p. 363):—

"The sun has as an appendage a cloud of cosmical bodies, which will continue for ever, or for an indefinitely long period, as a cloud appendage. It will not be fixed, the relations of its several parts will not be fixed; on the contrary, the cloud will shift and fluctuate, its members aggregating here and segregating there; but as a clustering appendage it will be permanent. . . . The existence of multitudes of eccentric systems implies necessarily the aggregation of meteors in the sun's neighbourhood. . . . These meteors would be severally illuminated with inconceivable splendour on account of their nearness to the sun. . . . Add to this that those approaching most nearly to him would be rendered incandescent if not vaporized by the intensity of his heat, and that most probably electric discharges would take place between them on account of the intense energy of the solar action."

But Professor Abbe's theory, that the rays he saw were themselves meteor systems, involves difficulties which he does not seem to have noticed. A meteor system would only by the merest chance appear as a beam lying directly athwart the sun. For that purpose it must lie beyond the sun. (Professor Abbe says it may lie either on the hither or further side of the sun, but a stream of meteors on the hither side would rapidly fade out near the sun, just as Mercury and Venus rapidly lose their lustre when approaching the sun in the part of their orbit nearest to the earth, or technically when approaching inferior conjunction.) Again, such a system, to appear straight athwart the sun, must lie in a plane passing through the earth's place at the time. Now, among some two hundred meteor systems through which our earth passes we find every variety of position. So that it might happen that a single meteor seen during totality would have just such a position as would make it appear to lie athwart the sun. Even that would be a strange chance. That two systems (two only being seen, be it remembered) should be thus situated would be a very strange chance indeed. But that in every eclipse ever observed the meteor systems should be so situated as to form rays apparently extending from the sun is altogether incredible. Sometimes, most assuredly, if Abbe's theory were correct, we should see meteor systems passing near to the sun without touching his disc. But beams of silvery light so situated have never been seen. There are other objections, but this may suffice here. We seem compelled to believe that the extension of the rays directly from the sun is not an accidental feature, but is due to the real extension of lines of illuminated matter radially from his globe. The explanation of the peculiarity remains to be discovered. We venture to predict that it will be related, and not remotely, to the explanation of the extension of comets' tails directly from the sun; for it is more than probable that enormous quantities of cometic matter exist in the sun's immediate neighbourhood. We would quote in conclusion another passage from the work to which we referred a few lines above, because, though written nine years ago, it corresponds well with the present position of the subject we have been dealing with:—

"To doubt what general view we should form of the corona and zodiacal light seems to savour, not of that wise caution which prevents the true philosopher from over-looking difficulties, but rather of an inaptitude to estimate the value of evidence. As to details, we may be doubtful. Other matter than meteoric or cometic matter may well be in question; other modes of producing light, save heat, electricity, or direct illumination, may be in operation in this case; and lastly, there may be other forces at work than the attractive influence of solar gravity, or the form of repulsive force indicated by the phenomena of comets. As regards also the true shape and position of the coronal and zodiacal appendage, and yet more as regards its variations in shape, we may still have much to learn. But of the general fact that the corona and zodiacal light form a solar appendage of amazing extent and importance, that they are not merely terrestrial phenomena, but worthy of all the attention astronomers and physicists can direct to them, no reasonable doubts can any longer be entertained."

* Continued from p. 472.

The Photographic News.

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THE PHOTOGRAPHIC EXHIBITION.

THE announcement of the awards of "honourable mention" in our last has, we regret to say, been the subject of adverse comment. We expressed a conviction that, in some of the cases we mentioned, medals might, with great propriety, have been awarded in place of merely honourable mention. But we are now met with a question as to the propriety of the award of "honourable mention" at all. Attention is called to the fact that no announcement was made, in the published programme of exhibition arrangements, and of the prizes offered, of any intention to award honourable mention as well as medals. Hence it is alleged that the change of programme placed some exhibitors at a disadvantage. We are asked by what authority "honourable mentions" were distributed without prior announcement? This is a question we cannot answer. Whether the original intention of the Council was that such awards should be made, and the announcement was accidentally omitted from the published regulations, or whether it was a spontaneous decision of the jury, we cannot tell. We can easily conceive that where meritorious pictures obtained the approbation of some of the jury, but not the unanimous consent to a medal, honourable mention was agreed to as a compromise; or it may be that unanimity as to a degree of merit might exist, but insufficient merit to take a medal might issue in a lower award, and since but one class of medals existed, the jury might feel that they were not exceeding their powers in making the secondary award. These, however, are but guesses on our part.

Let us, however, briefly examine this question of secondary awards for a moment, as an abstract question, without reference to the present case. It is not necessary to go into the vexed question of making awards to art productions; but assuming that the award of prizes is a beneficial stimulus to emulation, we still feel that there is danger in the classification of prizes so as to express degrees of merit, so hard to decide in works of art. In some of the great industrial exhibitions two or three grades of medals have been awarded, and a degree of merit unworthy of a medal distinguished by "honourable mention," which, as indicating a very fourth-rate excellence, fell into discredit as almost a stigma, instead of a proud distinction. We have, in fact, heard it described as a grave way of saying in effect: "This is very poor work; but it is well meant." But the effect was to

"Damn with faint praise, assent with civil leer,
And, without sneering, teach the rest to sneer."

That there are, or may be, occasions in which any encouraging notice may be a valuable incentive to fresh effort there can be no doubt. Recognition of good intention is only too rare, and should be gladly accepted when met with. The poet—Dryden, we believe—tells us of an occasion when

"They, too, had crowns who but endeavoured well;"

and one of the most graceful of modern lyrists, Mr. William Sawyer, pleads for consideration for those who—

"Battle's hottest brunt sustaining,
Only short of victory gaining,"

fail to win the "pæans and triumphal greeting" of the multitude. But there are many exhibitors at the Photographic Society's annual display to whom the patronizing pat on the back of honourable mention is an affront. Had they competed with the full knowledge that they might incur such an indignity, they would have no cause to grumble; but when the mine is sprung upon them without warning, we can understand a sense of annoyance, even if it were intended as a compliment. One thing is, however, tolerably certain, that the jury was an honest and a capable one, and, as we have before said, their awards will in the main give satisfaction.

The engineer photographers at Chatham—or, to be precise, the School of Military Engineering, Chatham—exhibit a number of landscapes of large size, all of an even high level of excellence. Some views in Wales, and some of Tintern Abbey, are very fine, and free from the opaque want of detail too common in photographs of ivy-clad ruins. Captain G. H. Verney has several good views of the same class of scenery, in some of which he has fallen into the error to which we have just referred—blackness in the shadows of masses of ivy and shadowed portions of architecture. In some cases, too (as in 74, 75, and 76), he has marred the value of his views by getting too near to his subject, and so including an insufficient portion of it to make a satisfactory picture. Alfred Pettit sends various views of English lake scenery. Many of them are very interesting, but he scarcely does justice to such a richly picturesque district, and errs frequently in the direction of blackness. Mr. J. Milman Brown sends some capital views from the Isle of Wight, and repeatedly shows skill in selection by making a charming picture of a simple lane scene. The lane scene, including Bonchurch Pond (61), is a good example, although the pond itself being in shadow gives a large mass of gloom in the picture. Whether at some other hour in the day more light could have been got on the pond we cannot say. The coast at Luccombe (82) is wild, and, probably, interesting to a geologist, but scarcely pictorial. Mr. F. Beasley's frames contain, as usual, some excellent work—neat, precise, and careful, without lacking pictorial elements. They are good examples of the Fothergill process, to which Mr. Beasley steadfastly adheres. The Rev. B. T. Thompson sends a few interesting examples of the blending of the photographer's interests with those of the angler. It has always seemed to us that the two hobbies might be well joined, the rod packing admirably with the tripod legs. Mr. Thompson gives us the landing of a trout, at least a two-pounder, we imagine, from the interest of the two disciples of the gentle Izaak. The Angler's Rest (119) is another good picture by the same photographer. Mr. A. Donald gives a similar subject, a quiet, shady pool, entitled, the Trout's Retreat (148).

The Highland scenes by the same gentleman are well chosen and characteristic. Mr. M. Whiting sends several frames of small landscapes and rural subjects, fairly representing the style familiar in exhibitions of a few years ago—clean, sharp, black-and-white pictures without atmosphere or sky. Mr. H. W. Reeves sends a frame (189) containing landscape and interiors, both good, the latter especially fine. Mr. Brightman's frame of stereos, entitled "Stray Peeps in Pleasant Places," are interesting. Mr. Arthur S. Howman's views of the Thames at Isley are fine, bold, and picturesque. Captain Abney contributes very little this year; but his charming half dozen frames (219 and following) are very excellent. Lieut. Darwin, the Honorary Secretary of the Society, sends three very picturesque views of Tintern. Dr. Huggius sends three frames of small pictures, which are amongst the gems of the Exhibition; they are exquisite in their delicacy and pictorial value. We

recommend every visitor to take especial care to see them: they are 245, 246, and 247, the negatives on gelatine plates, and the prints by Willis's platinum process, which appears to suit them well. A frame by Mr. H. A. H. Daniel contains some very admirable pictures, well-selected, and well-treated landscapes.

We have said before that the Exhibition was distinguished by a high level of general excellence. It hence includes many fine landscapes not calling for individual notice. Amongst these are some good views in Reigate, by Allan W. Richardson; the excellent Welsh views of Mr. Seymour Conway; landscapes by Corporal James Miller, Ernest Soutter, A. Galloway, A. Clout, C. Bossetti, C. G. Cutchey, W. S. Hobson, E. Hyde, C. R. Lenthall, the Hon. Mrs. Holden Hambrough, and others, many of which possess many merits.

COPYRIGHT IN PORTRAITURE.

THE allegations in the recent libel case to the effect that the friends of Mrs. Cornwallis West had used their utmost endeavours to prevent the publication and sale of her portraits, but without success, has excited considerable interest in the question, to whom does the copyright in a photographic portrait belong? The *Solicitors' Journal* has the following remarks on the subject:—"The statement of the prosecutor in a case which has recently occupied a police court, that 'he and his solicitor had taken every step to prevent photographs of his wife from being sold,' recalls attention to the state of the law as regards copyright in photographic portraits. Photographs were placed by the Copyright Act of 1862 on the same footing as paintings and drawings; and with regard to photographs 'executed for or on behalf of any person for a good or valuable consideration' the provision is satisfactory. The person executing the negative does not retain the copyright thereof, unless it be expressly reserved to him by an agreement in writing, signed by the person for or on whose behalf it was executed; in the absence of such agreement the copyright belongs to that person, and he may recover by summary proceedings before justices, against any person infringing his copyright, a sum not exceeding £10 for each offence, negatives made for the purpose of obtaining the copies being also forfeited to the owner of the copyright. But where the photograph is not executed for any person 'for a good and valuable consideration,' but gratuitously or by stealth, these salutary provisions do not apply; for, as it has been said, no one has a copyright in his own face. The Copyright Commissioners, in their recent report, say that, 'considering the facility of multiplying copies, and the tendency among photographers to exhibit the portraits of distinguished persons in shop windows, it may be thought that there is even greater reason for giving the persons whose portraits are taken control over the multiplication of copies than there is in the case of a painting.'"

The quotation from the statute given by our legal contemporary seems to make the case simple and clear. Unfortunately, however, it does not state the whole case, nor quote the entire section of the Act. After stating that the copyright shall belong to the vendor or person commissioning or ordering the portrait, and paying for it, and on whose behalf it was executed, it proceeds thus: "Nor shall the vendee or assignee thereof be entitled to any such copyright unless at or before the time of such sale or disposition, on agreement in writing, signed by the person so selling or disposing of the same, or by his agent duly authorized, shall have been made to that effect." In short, in the ordinary procedure of a photographic portraitist's business in which a portrait is ordered and paid for, no copyright can accrue, it appears, to either party, portraitist or sitter, without an agreement in writing defining the proprietorship of the copyright.

It seems probable that the section in question was the subject of considerable modification in the passage of

the Bill through Committee, and, instead of recasting the section entirely, so as to make it clear and consistent, the modifications have been grafted on to the original draft, rendering it clumsy, involved, and uncertain in meaning. In the new Bill recently printed, the subject is dealt with in a much more perspicuous manner.

Referring to this subject, the *Times* has the following remarks:—"The sale of photographs, the law as to which has attracted considerable attention in consequence of Mr. Cornwallis West's statement as to his inability to prohibit the sale of his wife's portraits, is thus dealt with by the Government in their Copyright Bill, which was introduced by Lord John Manners at the close of the last Session. According to this Bill, the copyright is to belong to the proprietor of the negative from which a photograph is printed. But where the photograph has been made on anyone's order for valuable consideration, the proprietor of the copyright will not be entitled to sell a copy without that person's consent, or to expose it for sale or exhibit it. And the person who orders the photograph is to have the same right of preventing the sale, the exposing for sale, or the exhibition of any copy, as if he were the owner of the copyright. Similarly he is to be empowered to take proceedings in case the copyright be infringed. With regard to the duration of the copyright, which is at present for the lifetime of the artist and seven years afterwards, the proposal is to fix it at thirty years from the date of publication."

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER VIII.

CRIPPLE AND RELIGIOUS PHOTOGRAPHERS—RETOUCHING!

I COULD go on for an indefinite time telling of eccentric characters in our profession whom I have met; many of whom, thank Heaven, like the glass pictures and Daguerreotypes, have died out. I could tell you of the photographer whose parents had seriously thought of making him a tailor instead, owing to his physical infirmities—it being in the end a toss up. It is marvellous the number of cripples you would meet with in our profession a few years since! If a lad had a weak head, a wobbly back, wanted an arm or a leg, or was otherwise incapacitated to take his place alongside the ordinary tradesman, the fond parents immediately decided that photography being a light (?) and genteel business, and a little more respectable than a tailor, he should take a few lessons, and then father's savings would easily start him! This is a fact: I have known of several instances, but they are now no more. They could make a fair clean picture as the times went, and friends flocked round them, bringing others with them—indeed, I think all their customers were more or less tinged, or, I should say, influenced—by charity or pity. No matter—they lived their little lives, drooped, and died, whether by their natural infirmities or the smell of the chemicals I know not; but they left photography as they found it, neither improving it nor even keeping pace with it. I think and speak of these lame dabblers with all the pity and gentleness that the strong must ever feel for the weak. Yet I cannot help advert to them, inasmuch that I can recollect once upon a time of wishing—actually wishing—that I had some flaming deformity about me. I had gone to fill a situation in a city where there were only three photographers then, and they were all cripples. The inhabitants seemed to think that to want an eye or a leg, or have a humped back, was a peculiarity of the business; and when I appeared among them they lifted up their hands and eyes in amazement. They would watch me—silently look over my fair proportions, and then exclaim—"Him a photographer—him! Well I never!" They made me ashamed of my strength.

I could tell you about the photographer who smudged along during the summer months in a back yard with a glass top, and delighted a winter audience as a clown over

Christmas. I could tell you about the female photographer—in most cases a vile imposition—to whom the timid and nervous ladies rushed, and to whom unruly urchins were presented by the hundred, and where the blushing youth would sometimes sympathetically wander. I could tell you about the flashing, dashing photographer who seemed to be doing so well, who was always dressed in the tip top of fashion, “with rings and farthingales and things,” who was “hail fellow, well met” with all the actors and drove the actresses out on Sundays, and yet who had to bolt one day without bidding anyone good-bye. And I could tell you about the religious photographer who never seemed to do anything, and yet who was every year building a house or buying one.

I must tell you something about this last one, for he is common, and, what is better, he is successful. Whether he is in earnest with his religion or not I don't care the value of a brass farthing. Enough that I know his style! He is suave—he is soft—he is wheedling—in fact, he verges on the lick-spittle; his maxim is a good one: more is got by licking than by kicking! He has a puritanical air, and his ready smile shows his well-kept teeth; he has a passion for shaking hands, and fondles the ladies' soft palms affectionately; he has *apropos* texts on the tip of his tongue to any amount; he wraps a tract round his earthen when he posts them; he talks in fatherly language to young ladies, and advises the young men sternly; he carries a Moody and Sankey hymn book in his coat tail, and goes to all the tea fights; he grins and smiles, quotes Scripture, and wriggles himself into every one's good graces—distributes his circulars—never enters a public house—and succeeds!

Now, you know, this is no fancy picture—he is a real bona fide photographer, and I am not joking when I tell you that I am half inclined to envy him his talents; for nothing succeeds like success. I, a man of the world, recognize and admire the attributes of my religious brother. He hath goods and chattels around him, while I am like the Bedouin of the Desert! Oh, my friends, rolling stones, like poor Geo, gather no moss! (Note: My wife has seen the last line, and insinuated that what I have lost in moss I have gained in *polish*—a very flattering notion.) To young beginners who wish to succeed, I cannot do better than advise them to follow in my religious friend's footsteps. The path is safe, and the goal is sure! One thing I will yet mention in regard to my religious friend that may be of service to his followers, and enlighten such old stagers as myself: he sends his bills out three times; twice the bill goes home endorsed “with respectful thanks;” the third time it goes he adds, “P.S.—The labourer is worthy of his hire.” This generally has the desired effect, for a P.O.O. or a cheque per return gladdens his heart.

I could tell you about the process and secret selling days, when hoary-headed rascals wandered the country, making a nice little living out of the struggling and credulous photographer. I could tell you all about the carbon process—the Saronotype—photo-crayons—Edwardtypes, and a legion of other types that would not profit any one. I slip over all those. Put the carbon process on one side, and look back over these past twenty years, and you will find the silver process—the albumen print—in almost the same state now as then. During all these years there is but one notch in the stick of time worthy of record.

Retouching!

Some of our sitters have indeed reason to thank the inventor of this art. How do you fancy Miss Freckle would have looked if she had got a print from the pure materials; or do you think Crowfoot, Esq., would have given you so nice an order if it had not been for the retouching? Indeed, now I think of it, we ourselves have reason to thank the inventor of retouching; for I am half inclined to believe that had it not been for the introduction of this gentle art, our occupation, like Othello's, would have been gone—at least, I feel sure that a great number of our present sitters would never have troubled

us if we could not spirit away the unpoetical wart or the tell-tale pimple.

Madam Rachel was a farce compared with the skilful retoucher: a few light touches of the latter's pencil, and ten years drop as if by magic off the age of his subject. The lines of care and trouble vanish; the hollow cheek is rounded; the sunken eye sparkles; the horse-shoe mouth loses its melancholy corners. It is wonderful—it is immense—the power of the retoucher.

To become a thorough retoucher one must lay in a great store of patience and perseverance.

“Every wise observer knows—
Every watchful gazer sees—
Nothing grand or beautiful grows,
Save by gradual slow degrees.”

I was slow, awfully slow, at picking it up. At one time it was my bug-bear: I could see it stand between me and good situations. The number of negatives I spoiled was enormous in my efforts to conquer it. My first false steps were in grinding the picture almost off the plate in my earnest efforts to obtain a proper tooth to my pencil, and then in using a soft B pencil that made marks of such a decided stamp that it was no wonder I got disgusted when I looked upon the miserable result: the pictures were worse than if I had left them alone. However, I was not to be beaten. I got a specimen—a German print—and went at it again. I was more cautious in roughing the varnish. I used a harder pencil, and gradually, as I toiled and worked, I discovered the secret of all secrets, viz., that the lighter the touch the more successful was the result. Most beginners, I believe, fall into the same mistake, and lean too heavily with the pencil. Another stumbling-block of mine was looking too close at the negative. Of course, this may be a matter that will entirely depend upon the eyes of the operator; but in my case I was so eager to fill up every minute flaw in the skin, that I lost the general roundness that makes the retouched picture so charming. Let young beginners mind what I say about this, and let me advise them strongly not to neglect this now all-important branch of our business. Independent of the pecuniary emoluments that the high-class retoucher everywhere gets, he, in my estimation, doubles the pleasure of his work. Is it not a delight to see the disappearance of skin blemishes—the rugose image slowly revolve itself into a picture round, soft, and beautiful? I know there are a certain class who cry out against retouching; they declare it takes from the character of the face, loses the likeness, and otherwise hurts the artistic attributes of the picture. This is all stuff! When I was struggling to learn the art, I would very often overload the face, but that was my inexperience. I now know at a glance where to put the touches and when to stop the process. I am in a house where we retouch every negative very highly, and I can safely say we never lose a likeness: we certainly take a few years off the sitters' ages; but this is an amiable weakness that brings us nice returns in the shape of large orders.

It is a curious thing in human nature that man, woman, or child never wish to look older or even so old as they are, and consequently the operator who can strip a few years off the sallow face of the old maid—reduce the fair, fat, and forty proportions of the widow to something trim and comfortable—give to the aged-bachelor an air of juvenality—is bound to succeed.

I cannot help thinking that old hands like myself, who had to make the best of their negatives by means of the developing and re-developing solutions, when a little blue or yellow was all the additional help that could be given to the picture, far outstrip the young ones. The young operator is rash and sanguine! If he gets a negative that is defectively lighted—a negative under or over-exposed—a negative with streaks and comets all over it—he will exclaim, “Oh, hang it! That will do, it can easily be made straight in the retouching.”

This is an awful mistake. Instead of using retouching here, you are abusing it; instead of taking it as a help to the good negatives, you are making it do the work of the chemicals or your own bad manipulation. A dirty negative, with all the retouching in the world, will never make a clean print. When my young friends get such a negative, I advise them strongly to set it aside and rectify the evil at once by taking another plate: ten minutes will do it, and the satisfaction afterwards will amply repay you.

Now I hope these few hints will be taken in the hearty manner they are given. One more word. I was for years troubled by the varnish—some was too sticky, some too hard—and I may mention now that I have discovered a varnish and an accompanying medium that work like magic. It is sold by one of our largest wholesale houses—has the qualities of being both cheap and priceless. It would be out of place to mention the name here; but, should any of my readers wish to know, they can drop a note to the Editor, when I shall be happy to give the desired information.

(To be continued).

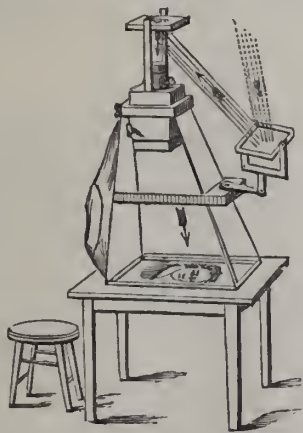
PLATT'S TRACING APPARATUS.

BY S. L. PLATT.*

A GREAT many photographers cannot afford a solar camera, and an apparatus that would enable them to have some of its advantages will doubtless be of service to them.

The first step is to procure the enlarged sketches of the picture you propose to make. This I do by means of the apparatus which I shall describe below.

As I have said, my invention is for tracing or sketching for crayon or other portraits. It can be used by any one, and for enlarging any object that can be attached to the top, which is to contain the picture, face down. It can be made of any size, from eight by ten to life-size. The lens, the movable front for focussing, clamps for holding the movable top, which is adjusted from inside, and governs the size of the object, and the reflector to throw strong sunlight on the object, will all be seen in the diagram;



also, the table or stand upon which the paper, or material upon which to draw the image as it is reflected down, is placed. This is a very useful instrument for any gallery, as any card can be enlarged to a perfect eight by ten, or larger, to show the customer how he would appear in a large portrait, which might induce him to have one made. The one I have is intended for a ten-inch head, or from that down to eight by ten. It is two feet square at the base, four feet high, fifteen inches wide at the centre, with a twelve-inch arm to the reflector. The reflector has three movements, or six, counting the backward movements.

The movable box has only two movements, up and down,

* Philadelphia Photographer.

for governing the size of the reflection. The box is nine inches square, one inside of the other, fastened with a thumb-screw inside of the front curtain. The movable top is raised and lowered from the inside, and fastened by a clamp with a thumb-screw in front. The thumb-screw is ten inches long, to reach clear across the front. The strip across the centre, holding the reflector, is eighteen inches long. The box or frame-work is covered with soft flannel, and lined with thick yellow paper, so no light gets in save the reflected light. It will be observed that the image is very strong, and has the appearance of a finished picture. The rays falling in at the top make it a very pleasant light to work in, just right for comfort, something like twilight. It takes one to trace by measure, as all portraits do on canvas or cardboard, from two to four hours.

An artist rarely crayons two heads alike from the same picture, and do his best. I can with this make eight sketches with ten-inch head in less than an hour, and have them alike every time, for I will not change the focus, and pin the paper each time at the same place. Changing the position of the reflector does not change the reflection, as it leaves the picture every time alike. This is not usually the case with a solar printer.

I am a great friend to the solar camera, but I can, by using a condenser, do the same work by this.

THE PRESS AND THE EXHIBITION.

(From the SOUTH LONDON PRESS.)

THE Photographic Exhibition year by year grows more interesting as by degrees improvements in manipulation are perfected and progress in art attained. We are afraid that in former years a great number of monstrosities, judged from an artistic point of view, found a place on the walls; but these have gradually grown less and less, and the taste and feeling now manifested would do credit to art exhibitions of much greater pretensions. This is particularly conspicuous in the collection now on view at the Gallery, 5A, Pall Mall East; and the general public, who, as a rule, know very little of what the photographic art is capable, would do well to visit the Exhibition, for we can safely say they will be surprised and pleased. In technical qualities, the photographs of the best men of the present day are perfect, and the point at issue appears to be what is the best process which combines the greatest rapidity and excellence. Without going into details, we may say that hitherto the collodion wet process has answered most of the requirements of the photographer, and until a few months ago no other process could compete with it. Latterly, however, a gelatine dry process has been much improved—so much so, that while much more conveniently worked, it is considerably more rapid and the results are nearly equal. We say nearly, because, although isolated examples may be produced which are quite as good as those by collodion, the general quality of the work is not quite up to the high standard which the practised photographer can always ensure with the old process. This, however, may be but a question of time and experience. Of the superior rapidity of the gelatine process there is but one opinion; and when we state that a swallow in the act of flying, as well as its reflection in a pool, can be photographed as sharply as though the bird had paused with its wings outstretched for the purpose, some idea can be formed of its marvellous actinic quality. Of the gelatine process there are any number of examples in the present Exhibition, and foremost are those produced by the South London exhibitors. Nothing finer in this way than the landscapes of Mr. Joseph Gale, of 22, Long Lane, Bermondsey, has ever been shown. As soft and as delicate as the best productions of collodion, they have also that desirable atmospheric effect which we look for in vain in so many photographs. Mr. Gale is the fortunate gentleman who has captured the swallow referred to above, and the picture (No. 6) is altogether a charming one. Not less so are "Brixham Trawlers" (Nos. 4 and 5), "On the Mole" (Nos. 51 and 53), and many others. Small in size, they are perfect in composition and technique. Mr. S. Payno Jennings, of 6, Rosendale Road, West Dulwich, is another photographer who has earned a reputation for artistic work, and his contributions,

though to our thinking not so interesting as his "Examples of the Poets" last year, show fine taste and excellent judgment. He sends eight pictures illustrative of English and Irish scenery. Of these, three are by the dry gelatine process, and, fine as they are, they are inferior to those by collodion. There is a fullness and richness of effect in the latter that we miss in the former, which, by contrast, appear somewhat flat. Mr. Jennings' work is, however, undoubtedly exceedingly good, and as an adept in the use of the collodion process, he deservedly occupies a high position. Mr. Mathew Whiting, of Lavender Hill, a veteran exhibitor, displays all his wonted skill of manipulation in a series of very interesting views. Captain Verney, of Esher, Surrey, has some excellent landscapes, and Dr. Huggins, of Upper Tulse Hill, three views, noteworthy from the fact that they were developed four weeks after exposure. Dr. Huggins' pictures are printed by Willis's platinum process, of which we shall have something to say farther on. Mr. B. King, of Croydon, also exhibits an instantaneous picture (No. 26) taken on a gelatine plate; Mr. Allan Richardson, of Croydon, a view near Reigate; and Mr. Wainwright, Jun., of Hoe Place, Woking, some clever instantaneous studies on gelatine plates made by himself. Mr. W. Bedford shows landscapes possessing all the care and clearness which distinguish his work. If Mr. Bedford could get rid of a certain mechanical look which his pictures have, they would gain immensely. M. S. G. Payne, of Aylesbury, gives evidence of his industry in a large number of very interesting landscapes and studies; and Mrs. Payne shows some clever pictures of flowers and still life. Mr. Vernon Heath's views of Burnham Beeches are perfect in their way, and Colonel Stuart Wortley's sea and cloud effects could not well be surpassed.

The Exhibition is not particularly strong in portraiture, but what there is good. Mr. Rocher, of Chicago, fairly takes the palm for variety and artistic excellence in what may be termed ordinary portrait work—a collection of "Panel" portraits being particularly noticeable. Messrs. Russell, of Worthing; M. Boucher, Brighton; and Mr. Byrne, Richmond, all exhibit good work. There are few attempts at what once used to be regarded as the be-all-and-end-all of photography—composition printing, that is to say, pictures made up of two or more negatives. Mr. H. P. Robinson, of Tuobridge Wells, is the high priest of this particular branch of the art, and he shows all his old skill in a large composition picture entitled "Between Two Lights." Clever it undoubtedly is, though one could but wish the only figure in the picture had been better worth the trouble evidently bestowed on the work as a whole. Mr. H. Garrett Cocking, of 26, The Parade, High Road, Lee, shows some interesting genre pictures, and has a well-executed enlargement of a group taken at the house of the Rev. F. F. Statham, Vicar of St. Peter's, Walworth, and President of the South London Photographic Society. Mr. T. Fry, of Surbiton, has also some specimens of good work.

Not the least notable exhibits are the specimens of platinum printing shown by the inventor, Mr. W. Willis, jun., 2, St. Mildred's Terrace, Bromley Road, Lee. The stigma which always rests upon the ordinary photographic print is that the chloride of silver with which the picture is formed is not stable, and hence, sooner or later, the photograph must change colour or fade. Platinum prints, on the contrary, are believed to be perfectly permanent, while the working of the process may be reckoned by minutes as compared with hours in the ordinary way. The drawback is the slowness and feebleness of tone which at present make it unsuitable for portraits. For book illustration, however, it is admirably adapted. Mr. W. Cobb, of Woolwich, shows some skilful specimens of portraiture printed in platinum; and Mr. T. G. Hemery, of Hanover Street, Rye Lane, Peckham, a portrait of Mr. Glaisher, President of the Photographic Society, similarly printed. There are a number of photographs taken by the artificial luxograph light, and also by the electric light. Mr. J. Hazard, of 6, Tho, Pavement, Clapham, shows a collection of fancy dress pictures taken between ten p.m. and six a.m. on gelatine plates by luxograph, which are more noticeable from this fact and from their technical excellence than for the subjects. To say the truth, one or two are not a little absurd. This, however, may not be Mr. Hazard's fault. Mr. Vander Weyde is, we believe, the only exponent of portraits by the electric light, and some are certainly as good as they could have been had they been produced in daylight. The Autotype Company, as usual, contribute a goodly collection of their excellent work—a number of photographs on enamel being particularly noteworthy. Mr.

R. Faulkner shows some Autotype prints of his very artistic portraits of the children of the Prince of Wales, and has also some charming specimens of the powder printing process on opal. We miss the name of Mr. Valentine Blanchard, of Regent Street, from among the exhibitors. Next year we hope he will enhance the value of the Exhibition by something from his hand. The pictures, as a whole, have been well hung, and every attention to visitors in regard to explanation of processes, &c., is paid by the courteous assistant secretary, Mr. Edwin Cocking, Queen's Road, Peckham. The Exhibition remains open during the month, and on Saturdays until ten p.m.

(From FUNNY FOLKS.)

A VISIT to the Photographic Exhibition is a positive luxury. The committee, with great thoughtfulness, have provided a number of *cartes* for those making a perambulation of the room. The novelty of the Exhibition is the number of portraits on "dry plates," a feat hitherto believed to be impossible; although the art was evidently known among the Jews, as we read of the head of John the Baptist being presented to Herodias on a *dish*. Portraits on "wet plates" have nothing to do with water-colours, as some suppose; while the difference between the photographic and the dinner plate appears to be that in one case the plate, and in the other the sitter, is placed on the "rack."

The pictures by the electric light are very striking, and those by the gelatine process, from their extreme rapidity, may be described as perfectly angelactic. In fact, gelatine is now running a neck-and-neck race with collodion, and so quick has it proved in taking pictures that we should not be surprised if it "took itself off!"—a consummation no doubt devoutly wished for by the old masters, who look upon it as the Pretender in this modern battle of Collodion.

This, however, is not of the least consequence to the public, who would gladly lend their countenance to any improvement in so "taking" an art; and in the meantime, let us hope that photographers, while fiercely waging the contest, will maintain that *camara-derie* which has always distinguished them.

NOTES AND PRACTICAL SUGGESTIONS.

BY A. M. DE SILVA.*

It will soon be time again to take up in earnest landscape work; in these parts we haven't had any decent weather for landscaping worth mentioning this year; we had August weather in May—haze, haze, and nothing but haze—it being impossible to obtain anything presentable where distance was included in the pictures.

Only recently I read a paragraph praising a lens for its wondrous depth of focus, near objects, and those ever so far—miles—away, being sharply defined. That might be all very well in the particular case of the correspondent; but in a picture it is woefully inartistic. We find authority, and very good authority too,† for getting some object, animate or inanimate, as near the camera as possible, on which alone to adjust the focus, entirely discarding the distances, as one of the best means in assisting to produce a truthful stereoscopic effect of relief and aerial perspective, the want of the latter especially having constantly afforded an excuse for the enemies of our art to deny the possibility of artistic effect being produced in the camera.

"Doctors differ," and "things ofttimes work by the rule of contrary." A good deal has been, and will continue to be, written about blurring, thick films being recommended in order to reduce it to a minimum. My experience during the past winter has proved the very opposite to be the best. During the winter I have, for several years past, had occasion to make a great many interior views. Where the exposure is protracted, a thick wet film is much easier to keep than a thin one; but finding that it was impossible to obtain good definition (on which a great deal of the success of the picture depended, the rooms invariably being filled with small photographs) with the thick films, I was obliged to abandon them and return to my former method—a rather thin film, when the definition was always most perfect. My experience has been the same with dry plates; more depending on

* Philadelphia Photographer.

† R. Manners Gordon in PHOTOGRAPHIC NEWS.

the quality and the colour of the film than on the thickness. More anon.

At this season of the year, chain lightning and oyster-shell markings are the bane of photographers; they both appear on the same side of the film—the thinnest. The former appears to me to be caused by a separation of (at least a portion) the cotton and haloid salts, leaving insensitised places on the film. Sometimes a very vigorous shaking of the collodion will mend matters; but it can be effectively cured by diluting the collodion a little, and after flowing it over the plate, before pouring the surplus into the bottle, lowering the upper corner of the plate so as to allow the collodion to pass in a steady wave over the first coating. The "oyster" shell, as recommended by Mr. M. Carey Lea years ago, can be avoided, to a certain extent, by keeping the plates cool and the collodion cold, coating as rapidly as possible, and losing no time in getting them into a well kept silver bath, draining the plates carefully, and keeping clean the corners of the kits.

I had doubts as to the matching of the new back cells for portrait lenses issued so long ago by the Messrs. Voigtlander; I have recently had an opportunity of testing one. Here I might mention that the original objective and the new back cell were not sent out together; the latter (through the kindness of Messrs. Benjamin French and Co.) having been loaned to substitute for the original back cell of a portrait lens made several years ago; the equivalent focus of the lens, a No. 7, being 18½ inches, its largest stop about one-fifth of the focal length. The focus of the new lens—that is, the front of the old combination, with the new cemented back cell (in place of the original one) measured nearly fifteen inches. It worked nicely, covering well a 6 by 8 plate with the largest stop— $f \frac{1}{4}$; the definition being perfect; the depth of focus sufficient to satisfy the most exacting. By separating the cells a little, the field was much flattened; and it would cut considerably more. Taking it altogether, it will be found a most useful attachment for those already possessing Voigtlander tubes, enabling them at half the cost to have a practically much quicker working lens, either for full-lengths or smaller pictures; while the original, on account of its longer focus, is better adapted for the large heads.

Correspondence.

HONORABLE MENTION.

SIR,—From the announcement in your last referring to awards at the photographic exhibition, I fancy someone has blundered. Will you pardon my curiosity if I ask you, or anyone else who can answer, to whom the blunder is due? Either the jury has out-stepped its instructions, or the announcement of prizes offered which appeared in your pages was imperfect. In it no allusion to awards of honourable mention was made. Was the jury empowered to award honourable mention, and was the announcement deliberately withheld? Or has the jury, with an unlimited power to award medals, of its own motion undertaken to limit the distribution of medals, and award "honourable mention?"

I ask this because I have reason to believe that "honourable mention," as compared with a medal, is regarded by many as something like a slight: something like a pat on the back for good intention in case of failure to win a prize. To be passed over unnoticed might mean that the picture had escaped careful attention; but to be honourably mentioned implies examination and a verdict of "not good enough."

This may be a trivial matter, but trifles make the sum of human things, and competing exhibitors feel these trifles.—Yours,

A NON-EXHIBITOR.

SIR,—I once heard a well-known photographer—I don't think he would object to having his name mentioned in this connection, it was Mr. Robinson—say that he had never

suffered the indignity of "honorable mention" but once. "But," said he, apologetically, "it was when I was very young, and at the hands of poor foreigners who knew no better!" After taking, as I have heard, more than fifty medals at as many exhibitions, I notice that he, with some other unfortunates, of whom I am one, has again had thrust upon him this unenviable distinction. But my object in writing was not so much to point this out, as to enquire by what authority the jury appointed by the Council to award the medals at the present Exhibition of the Photographic Society gave certificates of honourable mention at all? I turn to the prospectus of the Exhibition issued by the Council, and can find no mention of other awards than medals.

The creation of distinctions in the awards is a decided and much to be deprecated departure from precedent, and is not authorized or justified by any announcement. I have heard, and always believed, that the reason why the medals are of bronze was not from any motive of paltry economy, but that there should be no invidious distinctions.

The jury of the present exhibition have gone out of their way, apparently without any good reason, to introduce for the first time an effectual method of offending some of their best exhibitors. I think it more than probable that if some of the exhibitors had been aware that they would lay themselves open to this slight, their works would not have been seen on the walls of the Gallery.

I cannot understand any photographer seeing his works gibbeted as second-rate, without a sort of feeling of shame coming over him. Total neglect I can understand and forgive, but to be selected as one of a lot to be damned with faint praise is irritating, to say the least of it. I can understand a veteran like the one I have perhaps unwarrantably mentioned, who must feel surfeited with honours, caring very little about it; but it must be very different with those who are not so over-burdened with decorations.—I am, sir, with much regret,

HONORABLY MENTIONED.

MEDALS: TO WHOM DUE?

SIR,—A discussion, an important discussion, has been commenced in your journal regarding the relative rights in a completed photograph of those who have been concerned in the result. It is a subject which I have debated in my own mind since I became practically acquainted with photography, but I never broached the subject, as I did not know what the actual state of matters was. I now find—rather, I admit, to my astonishment—that prizes are given for the actual result merely.

Without wishing in the slightest degree to detract from the merits of those who have got prizes at any exhibition, I fail to recognise the propriety of a prize being given for a photograph which is not the work—I would almost say the entire work—of the exhibitor. When do we ever hear of any painting which is the work of more than one artist? I do not believe that a landscape painting, exhibited at the Academy or any of the other galleries of art, was ever the work of more than one artist; and in portraits, while the assistants may sometimes do the drapery and accessories, the face, which is the chief point, is the entire work of the artist.

Some of the photographic portraits which may have received prizes may have been the combined result of six persons—the poser, the operator, the developer, the retoucher, the printer, and the spotter-out. I do not say—because I do not know—that any one picture has been or is necessarily the result of the combined efforts of so many: but it may have been. To whom of all these is the meed of honour due? Perhaps not one of them gets it; but it may be given to an exhibitor who may have been merely the employer of all these co-operators.

Let photographs plainly state whether they are combination photographs, or the actual work (up to the printing stage, at least) of one man, and then the profession and the public can judge of the real merits, not only of every individual picture, but also of every individual photographer.—Yours obediently,

A. Z.

FRILLING IN GELATINE NEGATIVES.

SIR,—Having cured some very obstinate cases of frilling in gelatine negatives by the use of chrome-alum in the alkaline developer, I recommend it to such of my friends as may have any troubles in that direction. The proportion to be used varies from $\frac{1}{2}$ to $1\frac{1}{2}$ grain per ounce. It is also of use with Mr. Henderson's new developer. I greatly prefer either of the above to the oxalate developer, which has no latitude in its use, and negatives from which I have found to stain terribly after printing. The best varnish for gelatine negatives I find to be Hopkin and Williams' crystal varnish, with (if very much printing is necessary) a coating of shellac varnish over it.

I would advise those who intensify with mercury to avoid an excess of iodide in using the mixed solution, and to pass the negatives after intensification through a weak bath of hyposulphite of soda. Many negatives treated thus by me in 1861-62 are still in perfect order.—Faithfully yours,

H. STUART WORTLEY.

Talk in the Studio.

THE PHOTOGRAPHIC SOCIETY'S EXHIBITION.—The *Times* says:—"In our notice of this exhibition we remarked that although the Royal Engineers appeared among the exhibitors there was an entire absence of views of a military character. Since our article was written this want has to a certain extent been supplied; a fine series of photographs taken by the Royal Engineers in the neighbourhood of Jollalabad and the Khyber Pass can now be seen there, and these views give a good notion of the wild character of the country traversed by our troops."

COLLODION IN SURGERY.—"An interesting surgical case," says *Nature*, "was recently reported by M. Larrey to the French Academy of Medicine. A young carpenter received a blow from an axe on his right foot. The big toe was almost completely detached; it was held merely by a small thread of skin, and hung on the side of the foot. Dr. Gavey, who was at once called in, detached the toe completely, then after having washed it and the wound on the foot, he adapted the two surfaces as well as possible one to the other, and made them hold together by means of strips of lint soaked with collodion and placed along the toe. When the collodion had set, another strip was wound round. Further, an apparatus was used to keep all the parts of the foot in perfect immobility. Twelve days after, the dressing gave no bad smell, the patient was very well, and desired to go out, and twenty-four days after the accident the cicatrization was perfect."

PHOTOGRAPHS FOR ROGUES' GALLERIES.—Mr. Luke Fildes' well-known cartoon of "The Bashful Sitter," the sturdy jail-bird who violently resists the operation of being focussed by the photographing warder, and is consequently held down by main force in front of the camera, has found a curious reduplication in real life. There is under detention in Newgate, on a very serious charge, one Ambrose Fortescue, an American. It occurred to the usually judicious governor of Newgate that the interests of justice might be served if the police could be put in possession of a portrait of Fortescue, who was accordingly ordered to stand at attention to be photographed. The American, however, preferred to stand on his rights as an untried prisoner, and flatly refused to be photographed. Thereupon the governor, forgetting that he was dealing with an unconvinced prisoner, ordered the man to be seized and photographed against his will. Against this illegally high-handed proceeding the prisoner protested, and Mr. Callan, on Monday, interpellated the Home Secretary on the subject. Mr. Cress very promptly and candidly replied that the governor of Newgate had acted entirely against the rules in this matter, and that the Prison Commissioners, having had the circumstances brought under their notice, had expressed their disapproval of what had been done. Care will be taken, added Mr. Cress, to prevent the recurrence of such an irregularity. The charge against Fortescue being still *sub judice*, it cannot obviously be commented upon; but, should he get a good deliverance, he may be advised that an action will lie against Mr. Sidney Smith for assault and battery, in causing him to be photographed against his will.—*London Telegraph*.

To Correspondents.

B. REVEN (Haute Saone).—The cause of the serious fading of the portion of print enclosed we should regard as due to imperfect fixation. The hypo fixing bath has been too weak, and it is probable that it was employed to fix too many prints, and was probably acid. The germs of decay were doubtless left in the print when it left the hypo bath. As a rule, the fixing bath should contain 25 per cent. of hypo, and should not be used at a temperature of less than 60° Fah. It is possible that the green card may have facilitated the change; but whether it contained anything injurious could only be ascertained by analysis. 2. We do not know the precise formula used in toning by the gentleman in question, but we should think it was probably the acetate bath. The element of chief importance in obtaining such tones is the possession of a brilliant intense negative which admits of deep printing. With a deep print from a good negative almost any toning bath will give rich tones. The effect of the tone is much increased by mounting the print in contact with the glass. 3. For a short preservation the use of carbonate of soda appears to us to be best as described by Mr. Hopkins.

SOUTH DEVON.—We have not made comparative trial of all the commercial gelatine plates, and could scarcely undertake the responsibility of saying which was best if we had. Of those named in your list we have heard best accounts of No 3, and next of No 5.

C. B. (Bath).—We regret that we cannot give you the requisite information to enable you to construct a changing-box. We are not very familiar with the mechanical details of the construction of apparatus; nor, however familiar, could such instructions be clearly conveyed without the aid of diagrams. As a rule, such apparatus, to be of any use, must be made by a professional manufacturer. So also of the walking stick stand.

A. CONSTANT READER.—We fear that we cannot give you a certain opinion as to the value of the apparatus you describe, all of which is quite obsolete. We give you advice as to how to get some idea of the value more trustworthy than an individual opinion. Write to Mr. Morley, of Islington, to Messrs. Hunter and Sand's, or any other second-hand dealers, and ask what they will give for the apparatus; or get their catalogues and see at what price they offer similar old-fashioned apparatus. Voightlander, for a long time after English makers had adopted the improved style, made lenses not coincident in visual and chemical foci. This defect may largely be got over by care, but it is a perpetual source of trouble. We should think that the lens might be used for portraiture, but its quickness can best be ascertained by trial.

MIDDLE.—Your simplest plan would be to throw the solution amongst your residues, and make a new one. If, however, you are anxious to try the permanganate, proceed as follows:—The bath to be treated should be turned out into a beaker or bottle, and a drachm of a 10-grain solution of permanganate of potash to a pint of nitrate bath added, the solution being then agitated. If the pink colour rapidly disappears, a little more may be cautiously added; and when a faint tinge of the pink or purple colour remains, the solution should be set aside for a few hours to allow the reaction time for completion. It is not necessary to go on adding permanganate till all trace of the smell of alcohol is removed, as a portion of that body may be present without producing injurious results. A chocolate-coloured deposit of bin-oxide of manganese, and, probably, a little permanganate of silver, will be thrown down if excess be added, and the bath will be weakened. It should be remembered, however, that the strength of a solution as ascertained by its specific gravity is not very accurately indicated after treatment of this kind.

BEGINNER.—As a beginner, learn to rely upon care and artistic taste more than upon special formulae. The developer used by M. Adam Salomon, about which you enquire, is as follows:—

Ammonia sulphate of iron	...	...	75 grains
Glacial acetic acid	...	...	75 minims
Sulphate of copper	...	...	7 grains
Water	...	...	3 ounces

N. P.—We consider Captain Abney's Instructions in Photography to be one of the best manuals we have, superseding that to which you refer, both in scientific information and practical value. 2. The meaning of the term six inches focus in a lens is that it will give a sharp image of the sun, or any object at a very great distance, upon a focussing screen placed six inches behind the lens. What is termed the "solar focus" is that which gives the nominal focus to a lens. For near objects, of course, the focus gradually lengthens.

P. Q. R.—A method of using moist collodion emulsion giving reasonably rapid results was described in our pages two or three weeks ago on p. 477.

Several correspondents in our next.

The Photographic News, October 31, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

WHAT ARE OBSCENE PHOTOGRAPHS?—THE NEW COLLOID COPYING FILMS—MAYLAND'S MARVELLOUS MONKEYS.

What are Obscene Photographs?—It is surely high time we came to some understanding upon the question of what is an obscene photograph. At present, so far as we can understand, it suffices for any detective to declare that a photograph is obscene, and report that it is so, in his judgment, to a magistrate, in order that a warrant may issue for the imprisonment of publisher or seller. It is not a question of a summons. Mr. Phillpott, who was before the Lord Mayor recently for selling obscene prints, may deem himself fortunate that he was not taken up on a warrant. It was quite out of the usual course to issue a summons. A policeman holds some photographs of Zulus to be obscene, and, as soon as a policeman thinks so, this is enough to bring Lord Campbell's Act into motion, and a warrant is issued. You call a dog a bad name, and then hang him.

Very fortunately, in this case, the Stereoscopic Company are the publishers, and therefore we shall have the case decided on its merits. It would have been very unsatisfactory indeed if the course suggested by Mr. Phillpotts' counsel had been adopted, namely, to destroy the pictures, and withdraw the summons. If the photographs are truly obscene, let the law take its course, by all means, whether the Stereoscopic Company or other respectable firm is at fault; but if they are not, for goodness sake let us be told so, and an end made to the apparently absurd proceedings. We have all heard of the young American lady who put the naked legs of her piano in white frill trousers, to prevent visitors from being shocked, and no doubt there are people who would desire to see the Zulus provided with a garment or two in the photographs. Unfortunately, clothing does not always suggest decency; on the contrary, it is almost impossible, we hold, to have obscenity with absolutely nude figures. It is just the scanty clothing that frequently makes all the difference. We have no desire to say one word in countenance of even doubtful photographs, and, with every right-minded person, must express our unqualified satisfaction at the prosecution of producers and sellers of filth; but we must be excused if we hesitate to accept the opinion of a policeman as to what is obscene and what is not. We will go further, and say, that the way in which detectives appear to get up evidence in connection with these matters is very open to question. There is not a painter, draughtsman, or photographer, who has not produced work, at one time or another, which some of these men would not have the presumption to call indecent. Sometimes, even, it appears, that they importune and worry photographers until the latter, in a weak moment, at last part with pictures that should never go into the hands of others but art-students, and by this transparent trick they attempt to get a conviction. Sometimes we find Custom-house officers taking upon themselves the duty of judging between art and obscenity, and condemning as indecent work which has received the highest encomiums from artists. As if there could possibly be any doubt between an art study and an obscene print to the ordinary mind! But there is a difference between the Customs and the Police. The policeman, when he has been employed as a detective, has no longer an ordinary mind, and is apt to see a lurking crime in everything; thus it would be little use to attempt to enter into the intricacies of his thought, and to find out why and wherefore he considers a picture indecent. But the Custom-house officer, in his opinions, is more frank and intelligible. With him, obscenity in a picture is easily defined. All studies of the nude are with him indecent; that is the hard and fast line he draws, and many photographs of classic paintings of the German and French school are stopped by our Customs on the ground of

absence of clothing. It is not so long ago that a most ludicrous instance of art studies being stopped by the Customs came under our notice. The pictures were photographs taken by the late Mr. O. G. Rejlander, who was engaged, as our readers know, in making the studies time after time for painters. He had an order for upwards of a hundred such studies for India, prints from negatives which had been printed over and over again in the country, and the prints distributed. Mr. Rejlander was very ill at the time; but the pictures were selected, packed, and sent off. His death followed before the prints arrived at their destination, and his widow, a few months after his decease, received an insulting note from the Calcutta authorities, stating that the photographs had been seized and condemned. Some portion of them, indeed, had been destroyed by the clever officials, who had doubtless gloated over the studies until their own prurient minds had warped their judgment; but the rest were kept awhile in order to see what their consigner had to say for himself. Mrs. Rejlander came to us in great tribulation at the circumstance, and begged assistance in the matter. Luckily the proof of the genuine character of the sketches was not difficult to furnish, and we at once wrote to Major Waterhouse, the Deputy Surveyor-General of India, requesting his kindly influence in the matter. Every picture bore the familiar initials of O. G. R., and we were so fortunate as to have in our possession at the time a list of the subscribers to the Rejlander Memorial Fund which was started soon after our friend's death. This list of subscribers we enclosed to Major Waterhouse, so that the Calcutta authorities might have some idea of the estimation in which Mr. Rejlander and his works was held in this country. That list, we remember, contained the names of half-a-dozen ladies of title well known in the art-world, noblemen and gentlemen who were artists and painters, an archbishop, and was headed by one whose name is familiar as the founder and proprietor of the Grosvenor Gallery. The Calcutta authorities did not stand out after Major Waterhouse's representations, and we have to thank that gentleman for vindicating the name and honour of a dead brother. In London, the professional guardians of our morals seem lately to have got into the same way of thinking as the Calcutta gentlemen, and hence we say it is high time that we should come to an understanding as to what is an obscene picture. But we protest against any policeman or detective being appointed judge of such matters, and upon the issue of a warrant on the sole testimony of such an official.

The New Colloid Copying Films.—A hundred and one copying processes have suddenly been thrust into notice by our stationers and booksellers. They are, for the most part, variations of one and the same thing. You write with aniline dye upon paper, and this is pressed against the colloid film. This colloid film will then print off any number of copies, more or less, upon other paper pressed against it. Enthusiasts talk of a hundred perfect copies; but as you cannot get off more ink or dye from the film than you have put upon it, the number of copies depends upon the density of the dye first applied. The dye is dissolved in alcohol, and as the tacky gelatine (a mixture of gelatine and glycerine will answer the purposes of a printing block very well) will not absorb alcohol, it stands to reason that the dye remains upon the surface of the film, and comes off readily upon the paper hereafter pressed upon it. If a number of rough copies of one document is required, this method of copying may be useful, but at best the result is not better than a bad lithograph. A bottle of Judson's dye does very well for ink, the violet being best, as it is the strongest, and yields most copies.

Mayland's Marvellous Monkeys.—We see that Mr. Mayland is continually asking the question in these columns, whether we have seen his marvellous monkeys. We certainly have; but not at the Exhibition, where they ought to have been. The marvellous monkeys in question would

have made capital companion pictures to the fine animal studies that adorn the end of the room in Pall Mall, and are among the finest exhibits of this year. It is a pity, therefore, that Mr. Mayland did not think of sending his pictures, which would, moreover, have added one proof the more of the efficacy of gelatine plates. The strong point, however, in Mr. Mayland's monkey pictures is the quaint humour of the sitters. We have a monkey—Arabella Goddard—rattling over the keys of the piano in ecstatic delight, and we have the same monkey abandoning himself to low tastes and drink, represented with an empty beer-jug in his hand, in a low pot-house. "Studies of Character" would be a good title for Mr. Mayland's marvellous monkeys, and we hope that gentleman will forgive us saying that his models, clever as they are, appear more familiar with low life than high life; but, perhaps, we can hardly expect such lofty ideas to be floating through a monkey's brain, at the time it is photographed, as are to be found in human heads—say, of professional beauties.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY AT THE NATIONAL CELEBRATION OF THE INDEPENDENCE OF BELGIUM, 1880.

If anything were wanting to prove that the young state of Belgium has attained the period of adolescence, it would most surely be demonstrated by the ardour and enthusiasm with which the inhabitants of that country are making the necessary preparations for the national *fêtes* with which are to be celebrated the fiftieth anniversary of the foundation of the ruling dynasty. More especially at Brussels the organisation and arrangements of these *fêtes* are creating great excitement, and appeals have been made to all the Associations of art, commerce, and manufactures, to lend their aid in promoting the good cause. Photography will be required to play a prominent part at the celebration, as, indeed, is already manifest, although a whole year still intervenes between the present and the date of the *fêtes*, which are fixed for the month of September, 1880. The Special Commission charged with the various arrangements have been for some time in full working order, and they intend soon calling on the photographers to render all possible assistance in furtherance of their plans. It is intended to form a sort of Pantheon, where will be exhibited portraits of all the illustrious men to whom Belgium has given birth, as well as representations of their best known works; also illustrations of all the great undertakings—whether due to private enterprise or to the energy of public departments—which have been brought out since the separate kingdom was established in 1830. Although the country is a small one, a very large space would not be sufficient to contain all its works of art and science; architecture, painting, sculpture, manufacturing industries, organisations for the promotion of agriculture, and charitable institutions, are all so many innumerable monuments of the vital and productive forces of the nation which can only be represented at this Pantheon by faithful reproductions. Here, then, photography will come into play; our art will be able at least to serve as a guide to the decorative artist, even if it be not required itself to produce pictures for filling up gaps in the marvellous show which it is proposed to form.

It is, therefore, easy to foresee the importance of the official rôle which photography will be called on to fill in this national celebration; but the part which the art in its private capacity is capable of playing seems to be no less important, and it may, perhaps, be of service to point out this fact. Operators who are strangers to the country may possibly entertain the idea of doing something to add to the success of the Belgium celebration, or of collecting and distributing photographs which will serve as reminiscences of it. There is so much to be done in this direction that the native photographers will scarcely find their interests

injured by a foreign art speculation. It can but create healthy rivalry in the production of albums containing views of churches and public buildings, and copies of the pictures in public and private museums, and in their sale to the numerous strangers who will flock to this artistic corner of the world to see it arrayed in holiday garments, and proud of its triumph and the trophies of its success. The fervour of patriotism may be relied on not to leave unknown the smallest of the glories of Belgium.

All the societies and clubs in this country are desirous of offering to the Royal Family of Belgium some *souvenir* of the fiftieth anniversary of the foundation of the dynasty, and many ideas and plans have been entertained. Eventually the majority have decided to present to their sovereign a series of richly-bound albums containing the portraits of all the members of these associations. Those who know how largely the club-spirit is developed in Belgium will be able to form an idea of the enormous weight of paper, cards, and binding which King Leopold II. and his august family will be asked to accept; there is also reason for supposing that they will never be able to find the time to examine all these loyal and affectionate offerings.

As regards private enterprise, the house of Ghemar Bros., of Brussels, always distinguished for energy and ability, has been the first to make preparations for the coming event. Of course, their position as Court Photographers offers to Messrs. Ghemar an opportunity of carrying out successfully undertakings which other houses might find it impossible to enter on. Thus in a very short time they have already produced an album containing the portraits of all the ministers, senators, and deputies of the Belgian Parliament, and this will, on the occasion of the National Celebration, be presented to the members of the Royal Family. Meanwhile, however, the collection of portraits of all the political celebrities of the country may be regarded as published, and the public may select and purchase any of these portraits they may wish for without fear of discovering the secret. Taking the recipient by surprise is generally considered to be an essential element in making a present, but it does not appear to be necessary in the case of crowned heads.

The ingenuity of Messrs. Ghemar, however, has not stopped short at this point; they have hit on and are putting into execution a most original idea, though no one will be surprised on that account, for they have always had the credit of a monopoly in eccentric productions. It will be in the recollection of my readers that Messrs. Ghemar themselves, excellent draughtsmen and caricaturists, have been the means of drawing public attention to the greater number of celebrated pictures of our age, and have for a long time maintained an exhibition of artistic fancies, many of which have been reproduced by photography. The Belgian public, accustomed as they are to the whimsical and eccentric though lucrative enterprises of Messrs. Ghemar, have learned without astonishment that their latest idea has been to invite all burgomasters of the country to come and have their portraits taken, with the object of forming an album of all the principal communal magistrates, which is also to be offered to the king on the occasion of the National Celebration of 1880. The proposition has met with general acceptance; it is held to be an excellent idea to present to the head of the nation a collection of all the civil officers whom he has appointed, and who may be held to represent the real popular opinion of the country. In Belgium, the chief authority in the commune is a council elected by the citizens, and the burgomaster, or mayor, is always selected by the king from among the councillors thus elected.

No doubt the burgomasters are much obliged to MM. Ghemar, and it is to be hoped that MM. Ghemar will be equally pleased with the burgomasters. It must also be remembered—and the wily photographers have probably not

lost sight of the fact—that the burgomaster is surrounded by a bevy of communal councillors and faithful dependents, who will be eager to possess a portrait of their chief. Besides, there are the members of his family who will all be anxious to have a photograph of their respected relation, “taken at Brussels expressly for His Majesty.” The sale of copies of the photographic portraits will, therefore, probably be large, so that Messrs. Ghemar, having hit on a highly patriotic idea, and having carried it out at their own expense, may at the same time have entered on a successful commercial speculation. This excellent plan may be recommended to the notice of the photographic contractors of larger countries, who, perhaps, may be enchanted to work it out on a large scale if an occasion presents itself. Once the idea is given, there will, no doubt, be an opportunity to put it into practice at any one of the commemorative celebrations which are now so common, and if there are no burgomasters there will surely be some other class of public functionaries who will like to have their portraits presented to the Chief of the State.

K. VERSNAEYEN.

ON WASHING SILVER PRINTS.

BY J. E. WALKER.

EVERY photographer knows the value of removing every trace of hyposulphate of soda from the prints immediately after removing them from the fixing bath; and that the process by which this is done should be as simple and efficient as possible, will be acknowledged by all.

The process that I am about to describe is, I think, as simple, and also as rapid, as anything that has been invented. It may not be new to some, but, as I have never seen it in print, I venture to give it to the photographic world, believing that it will be well worth a trial. First, procure a wood box or bath, say about twenty inches by sixteen (with glass bottom preferable), and about four inches deep; make a series of round holes about half an inch hole all round, and about an inch from the top, which are to allow the waste water to overflow as the trough gets full; set it into a large sink and under a tap, to which attach a short piece of india-rubber tubing; on the other end of the tube, and within a few inches of the top of the trough, fix what is known as a “rose” (they are used by fishmongers to rinse the fish on their slabs, and consist of a bell-shaped tin end perforated all over with small holes); these, when the tap is turned on, send a shower of water all over the prints, which are placed in the shallow trough underneath it (these small streams of water are similar to a good shower of rain). When the prints are washed enough, they can be removed, and the washing trough may then be put away until wanted again. It can also be used for fixing the prints in if required, but it is better to have a separate dish for this purpose only. The above will be found easy to make, and inexpensive, and requires no attention when in use, as when the water is started it rises and overflows through the holes round the box into the sink, thus being self-acting. I have seen many different arrangements for washing prints, but I think the above method will be found most easy of any.

A PHOTOGRAPHIC NIGHTMARE.

BY W. G. SHAW.

To be, or not to be, that's the question. Whether 'tis better in the *News* to enter a vision of the night, or to pursue the even tenor of one's way rejoicing in dry plates and short exposures. Lest my dream may prove of value to “some forlorn and weary brother” whose studio is besieged by the juvenile community, and who, on reading, may take heart again, I put aside my natural reserve and reticence, in the cause of photographic humanity.

Methought the day was dull and the hour late, when a cabinet group demanded my exertions. Their number

appeared about six all told, but for some reason (what, I cannot tell) one urchin ran about so, that, like Paddy's pig, I never could reckon him up.

This brat, imp, or hoy, was the genus which developed a dream, until it became a positive nightmare, so intense did my anxiety become to secure the young rascal. All could he got but him. A happy thought at last came to the rescue: a dry plate with a few extra drops of ammonia in the developer—yes, bound to get him now—and I awoke with a feeling of supreme thankfulness to Mr. Swan in particular, and all good dry-plate manufacturers in general, for the ease, comfort, and certainty with which an operator can now perform his daily duties.

Much is written about the development of emulsion plates, and as an aid towards successful working and help in emergencies, it is well to observe the experiences of different workers. In this, as in all photographic formulas, it is scarcely possible for every one to succeed alike with the same formula, but every operator must have some idea of the general principles, or his success will become mere chance. I have long since discarded the oxalate method. Doubtless some will think it perfection, and in their hands it yields fine results; but to me it was verily a “weariness to the flesh.” The length of time it took to develop, except when quite fresh, was a great drawback. My practice being almost exclusively confined to portraiture, time is of vital importance.

The pyro formula published on Swan's instructions with slight modifications I find work perfectly. To be explicit, I make two solutions as follows:—

No. 1.—Pyro 20 to 30 grains
Rain (not common) water 10 ounces

By increasing the strength of this solution greater intensity is obtained.

No. 2.—Liquid ammonia $\frac{1}{2}$ ounce
Bromide ammonia 1 drachm
Water 10 ounces

Mix equal proportions of each solution and flow over the plate, which is of course placed in a flat dish. To have a really good negative it should develop as readily as a properly exposed wet plate. Should it not do so, have at hand a solution of ammonia, one part to one part water, and add a few drops, taking care not to add too many, nor in such a manner that it acts unevenly upon the negative. Observation and experience will soon teach when to add and when to refrain from adding. To check too rapid development caused by over-exposure, a solution of—

Bromide 1 part
Water 2 parts

added in the same manner, is extremely useful, although it is best to endeavour to obtain the correct time.

Regarding intensity, proper development (if exposure is right) will always secure sufficient density; but should the negative while developing appear to lack vigour, add a little (say 1 drachm) of the pyro solution, which invariably puts it right if done in time.

In my early attempts I was plagued terribly by round spots, apparently lumps, but which I found to be due to air-bubbles upon the plate under the surface of the developing solution. These will cause no end of mischief, and if the manipulations are not carefully executed will prove extremely annoying.

Mr. Swan says the pyro solution should be mixed about two hours before using. This may be so, but in my experience I find it work just as well, and sometimes better, three or even four days old, while the hypo used a week works clean and good; certainly, I keep the pyro solution in the dark room, but take no more care of it.

Waiting for negatives to dry when copies are required in a hurry is a little tedious; the spirit flooding greatly accelerates drying, especially if the negatives are put in a rack near an open window. Retoning without varnishing is at first somewhat troublesome, but practice will soon overcome this difficulty.

No one who has once overcome the few primary difficulties of rapid dry plates, and began to work them successfully, will be content to return to the old wet process. When sitters speak in eulogistic terms of such short exposures, and praise the perfect portraits of their little ones, it will indeed be only the "old fogies" who will not yield to the advance of chemical science as applied to photographic art.

PHOTOGRAPHY AND LIBEL.

THE action against *Town Talk* for libelling Mr. and Mrs. Langtry and Mrs. Cornwallis West was recently heard at the Central Criminal Court. After going through the evidence, the chief part of which we have already published, Mr. Watkin Williams, on behalf of Mrs. West, said:—

The libel upon Mr. and Mrs. West which appeared in *Town Talk* was not a "mere burlesque," but a most serious and grave libel. Mr. West is the Lord Lieutenant of the county of Denbigh and a magistrate holding a high public position. He and his wife live, and have lived, with their children in the district for years, beloved and respected by their neighbours. Mr. West and his family have a mansion at 49, Eaton Place, London, and they live there in the season. Of late years, since the photographic art has developed itself with such perfection, a large number of artists and photographers have—in the legitimate exercise of their trade—pushed it to an extent which is, perhaps, to be regretted. Almost all persons who occupy any position at all—who are conspicuous in society, in rank, in professional eminence in the Senate—are now inundated with applications by artists to have the distinguished honour of taking their portraits, and so on. When that started, probably nobody thought very much of it; but by degrees this became a nuisance. In the case of women, they began to discover to their annoyance that their photographs were beginning to be spread over the town. I propose to show your lordship with regard to this that a misconception and a mistake has arisen as to the power of persons to stop the publication. I can show you that any one who has his portrait taken has no power whatever to prevent the photographer from publishing the photograph. In this case Mr. West more than a year ago took steps to stop the publication of these photographs. He consulted me about it, and I told him then, as I tell him now, that he has no power to stop it.

MR. JUSTICE HAWKINS.—That is to say that when a bad photographer sends out a hideous deformity as your portrait you are bound to let it go.

MR. W. WILLIAMS.—I mean to say that the copyright is in the photographer. By a strange error in the report of the commissioners on copyright, the words of the Act of Parliament are left out. Mr. West took every step in his power to prevent the photograph of Mrs. West being published.

The learned counsel then read the libel complained of, which has appeared before, and proceeded to refer to the state of the law, to show that Mr. West had not the power to stop the publication of the photographs.

MR. JUSTICE HAWKINS, interposing, said he would not pronounce upon that law then. He thought it was sufficient for Mr. Williams to have said that he advised Mr. West that he could not stop the publication.

MR. W. WILLIAMS.—Mr. West did take steps to stop the publication, but some of the photographers being advised as to what the law was, declined to discontinue it.

MR. JUSTICE HAWKINS.—The only way to stop the publication in future is for the person photographed to purchase the negative itself.

A verdict of guilty having been returned,

MR. JUSTICE HAWKINS subsequently passed sentence. After some stringent observations on the enormity and persistency of the offence, he said: Therefore, for the offence of which you have been found guilty, in publishing, knowing them to be false, those libels on Mr. and Mrs. Langtry, I sentence you to be imprisoned for eighteen calendar months, and I further direct that at the expiration of that time you enter into your own recognizances in the sum of £1,000 to keep the peace and be of good behaviour towards Her Majesty and all her liege subjects for the further term of eighteen calendar months. So much for the indictment which is preferred at the suit of Mrs. Langtry. As regards the indictment preferred as affecting

Lord Lonsborough I sentence you for that to be imprisoned for six calendar months. That will run concurrently. I come now to the libel upon Mr. and Mrs. Cornwallis West. Their case stands upon a very different footing. You do not charge in the libel to which you have pleaded guilty that they were guilty of actual immorality. You did not make that charge, for you thought probably that having had six consecutive weeks of the divorce of Mr. Langtry you must vary the food you offer to your readers; therefore, you thought fit to hold Mrs. Cornwallis West up to contempt and ridicule, and make her appear a wanton, foolish, and immodest woman, who thought proper to have her photographs taken and placed along with half-nude persons in shop-windows. And this statement you thought proper to accompany with a description of her inner life, with such detailed circumstances that it would not be surprising if some persons were to say, "Can all this be untrue? Here are all these details. Can any man have the impudence and the audacity to publish such libels as these?" Let me tell you, and in telling you let me tell all those who may be interested to know it, that it is just as much a libel to hold a man or woman up to ridicule as to make imputations against the moral character of the individual. No man has a right to hold another up to ridicule and scorn, and if he does publish that which tends to bring another into ridicule he is amenable to the criminal law of the country. For this I pass upon you the sentence of six months' imprisonment, to run concurrently with the other sentences. The effect of my judgment is that for the libels of which you have been convicted you will be imprisoned for eighteen calendar months; and I only regret that I have not the power to add hard labour.

NOTES AND PRACTICAL SUGGESTIONS.

BY A. M. DE SILVA.*

SOME three years ago, in *Anthony's Bulletin*, I described the singularly rapid fading of some prints which had hitherto stood well, until they were wetted. I have also some prints made at the same time, on a different brand of paper, which are (with the exception of being slightly discoloured by time, ten years having elapsed since they were made) still in excellent condition. I divided several of them into four, damping them—nay, soaking them in water for ten minutes at a time—many times during the past three years, and still they do not fade. Why should the two samples of prints, made at the same time, from the same negatives, act so differently? They were both made on Rive paper, but the albumenizing was widely different. The albumenizer of the paper on which the lasting prints were made—the late Mr. Spencer, of London—at that time rather prided himself on using fresh albumen; those which faded "every time" were made on stinking stuff, rotten at the start. I am not alone in the conviction that stale albumen (necessary where the paper is twice coated) has a good deal to do with the fading of the proofs. I myself fail to see the great superiority of "double stinking" over the "single fresh." It is claimed that the delicacy of shadows is much better rendered; that the print "presents a much more beautiful appearance." Now, using well-albumenized paper, with a burnisher or hot press, they can be shined up—this being the idea of the beautiful with the vulgar mind—to any extent, which process will give additional transparency to the shadows. For larger work, undoubtedly the less glossy presents the most artistic appearance.

We have all sorts of remedies for blisters, and still they come, and never again adhere to the paper support; for once the albuminous coating separates from the paper support, it does not again adhere to it. If any one doubts this, let him bend inwards a mounted print which has blistered, and the larger blisters will at once show on the surface. If the prints do not blister in the hypo—and I have seen them show signs in the toning bath—very strong fresh salt and water will mend matters. But as they start generally—

* Continued from p. 515.

better, make their appearance—in the hypo, we must commence before this, in order to prevent them.

Perhaps the result of some experiments I have recently made will not be out of place here, and possibly enable others to steer clear of some difficulties. In every case I used Cross-Sword Double Albumenized Rive paper, both eight and ten kilo., the latter being the weight generally used here. On a strong bath for the paper as salted, sixty grains to the ounce, drawn over a rod, both just neutral, the prints bronzed badly; felt suspicious in toning bath (of sal soda and salt and gold), and blisters appeared in the hypo, 1 to 12, which produced murky prints. Longer fuming occasioned larger blisters; and when this was done, and the prints were placed in the first washing water, acidulated with acetic acid, the prints felt decidedly rough in the toning, were covered with small blisters in the hypo (kept weak still, and at a normal temperature); passed for several minutes through the salt solution, which was gradually diluted in the wash-tank. They were one magnificent crop of blisters—worthless! Forty-grain bath, showing the slightest acid reaction, short fuming—just sufficient to produce reddish-purple tint on print; less bronzing; prints not looking quite so bright as with longer fuming, but toned brilliantly in a bath of salt and gold, to which was added a very small quantity of bicarbonate of soda; fixed in hypo, 1 to 8; very few tiny blisters making their appearance in the hypo. Bright prints.

Two baths, as recommended by Mr. H. T. Anthony, a stronger and a weak one, nearly neutral, the paper being drawn across a glass rod, short fuming; no acid wash; toning and fixing as before. Result: no injurious bronzing, no blistering. Try it.

Correspondence.

MR. GALE'S "SWALLOW."

SIR,—The Editor of your Liverpool contemporary expresses his belief in the genuineness of Mr. Gale's Swallow: that is, that the bird, the reflection in the water, and the landscape were taken at the same time, on the same plate, in the same fraction of a second, being, in fact, to quote your contemporary's own words, "simply a *bona fide* instantaneous exposure." It would be very interesting to many of your readers to know if this is really true. For my part, I doubt it extremely, and cannot help thinking your contemporary is as credulous as the outside and this year more than usually ignorant press. I have always given Mr. Gale credit for more cleverness and skill than what would be implied by a mere accident happening to him, as, of course, the chances are many millions to one that a swallow should fly over exactly the right place in that small space of time during which Mr. Gale was exposing his plate.

The famous "Gull" picture of some years ago was never, I believe, given to the world by its author as a genuine instantaneous picture, although it was claimed as such by some of the writers on the subject. As far as I remember, it was put forward only as something for photographers to puzzle over. Will Mr. Gale inform us if he intends something of the same kind, or whether his pretty little picture is really a genuine "accident?"

INQUIRER.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

DEAR SIR,—Will you kindly permit me through your columns to announce that the Annual Technical Exhibition of the above Society will take place on Thursday next, November 6th, at the Society of Arts, Adelphi, when the committee will be pleased to see as many of the profession as can be present. I may state that the "Platinotype Process" will be demonstrated by Mr. W. Brooks; the "Luxograph Apparatus" will be worked; Mr. L. Warnerke will exhibit

Mons. Vidal's new camera; and exhibits by Messrs. Cowan, Ayres, Harrison, Aekland, and others will be shown. The chair will be taken at 7.30. Mr. Jabez Hughes has kindly consented to act as Technical Explainer.

May I also remind your readers that the Annual Dinner is fixed for Saturday, November 8th, at the Cafe Royal, Regent Street. Any further particulars of both these meetings I shall be happy to supply.—Yours faithfully,

H. GARRETT COCKING, Hon. Sec.

26, The Parade, High Road, Lee, S.E.

CAUSE OF THIN IMAGES ON DRY PLATES.

SIR,—Frequent complaints are made of the thin images resisting intensifying often got on dry plates. I believe the main cause of this is the use of German pyrogallie acid instead of English. The difference of price is considerable in money, but the English develops up a far more vigorous printing negative with a smaller quantity of developer than the other, and in the end is cheaper.

I some time since suspected the same thing, and caused an analysis to be made, with the result of being assured the English and German were identical for all practical purposes. But further experience convinces me it is far better to use English, and that it forms a complete remedy for thin, poor images.

Will some of your correspondents kindly report experience.—Faithfully yours,

SAMUEL FRY.

THE AWARDS OF THE JUDGES AT THE PHOTOGRAPHIC EXHIBITION.

SIR,—Your comments, and those of your correspondents, upon the above awards, open this very great question for thought, viz.: How far is it desirable to recognize the exhibits which are notoriously produced upon plates prepared by others than the exhibitors, and the prints also? When we observe how large a proportion of the recent prizes go to exhibitors of this character, one cannot but think that the whole question of awards and medals requires revision.—Yours, &c.,

A NON-EXHIBITOR.

SIR,—There are other matters beside the medal awards to give occasion for grave dissatisfaction with the Council of the Photographic Society of Great Britain. In their notice of the holding of the Exhibition they stated that no pictures would be received after a certain day. To my own knowledge this deterred one person from exhibiting whose picture, from various causes, was not ready until the day before the date given as the last day for receiving. Trusting to the statement in the notice, he made no attempt to get the picture off, knowing that it would not arrive in time. Notwithstanding, the Council received and hung several pictures after the day in question.

As regards myself, I have refrained from exhibiting since the objectionable rule was framed of charging non-members for space. As I am an amateur I have no pecuniary advantage to gain by exhibiting, and I decidedly object to pay for the amusement and gratification of others; in addition to which I believe in certain favoured cases the rule has not been put in force. With a Council playing fast and loose in this manner it is not my intention to exhibit again. Very many old exhibitors have been absent from the walls during the last two or three years, and I predict that fewer pictures will be exhibited in future years than even there were this year; for it did not require an expert to perceive that the exhibits were terribly spread out.

As to whether photography has made any strides in the direction of "rapidity" within the last twenty years may perhaps form the subject (with your permission) of another letter.—I am, dear sir, your faithfully,

JOHN VAUGHAN.

The Photographic News.

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PHOTOGRAPHY AND INDECENCY.

PHOTOGRAPHY has figured in the Courts very considerably of late, and amongst other things it has given the British public the edifying spectacle of a Lord Mayor being called upon to legislate on a question of art decency. Mr. Phillpott, a bookseller in the City, was summoned before the Lord Mayor and charged with exposing in his window obscene photographs, the said photographs being portraits of semi-nude Zulus. The defendant said that he purchased the prints of a respectable firm—the London Stereoscopic Company—which was under the control of Mr. Alderman Nottage, and he did not think it probable they would sell anything indecent. Most people would be of the defendant's opinion, especially when he added that these were simply Zulus in their native attire. Now it may be admitted that a Zulu in that state of nudity which he considers full dress is rather a nasty object to look at. We have a portrait of Cetewayo before us now, taken under the sanction, if not by the direct authority, of the Government representatives, in a dress which would be considered very far from the proper style for presentation at an English Court. But we should scarcely regard the dictum of the Lord Mayor sufficient to warrant us in pronouncing it as indecent. The Lord Mayor would scarcely like, he said, to make profit out of such things as these photographers did! We strongly object to anything like speaking evil of dignitaries, or we should be tempted to say that his Lordship's remark recalls that of another person who had a good opinion of himself, and was thankful that he was not as some others were. By a side wind his Lordship's remarks seemed to aim at the Stereoscopic Company, and he expressed his resolve to "get at" the publishers. Subsequently a letter from the solicitor of the Stereoscopic Company has appeared in the *Times*, denying that the Zulu photographs they published could be legitimately styled indecent, and expressing their readiness to accept service of process, which could bring them to the bar of justice to defend their position.

This is well. Photography has had enough to answer for; but surely its literal truthfulness of rendering ethnological studies is not to be pronounced indecent when the engraved studies of the same subjects pass scatheless. The Lord Mayor ridiculed the idea of there being any comparison between the drawings in the illustrated papers of the same and similar subjects and the photographs. In other words, he ridiculed the idea of there being any comparison between the truth of photography and the skill of the draughtsman. In matters of this kind the civic dignitary should remember decency or indecency generally depends on the intent; and he should also remember that decency or indecency is often in the eye of the beholder. The prurient mind will see indecency in a marble Venus. If his Lordship's zeal on behalf of decency were directed against the ugly nudities which placard the streets of

London, advertising quack medicines, it would be fully engaged, and the walls and hoardings might be relieved of a serious eyesore—nasty, if not obscene.

The case was eventually adjourned, and a few days afterwards the summons was dismissed. The Lord Mayor, who, on the latter occasion, contrived to bring upon himself a storm of hisses, incontinently closed the Court on Mr. Alderman Nottage rising to make some explanations in answer to the Lord Mayor's innuendoes in regard to his action in the matter. The worthy Alderman eventually, amidst loud cheers, impeached the Lord Mayor as having brought discredit on his office and on the ancient chair he occupied, the Lord Mayor in the meantime invoking the police.

COPYRIGHT IN PHOTOGRAPHIC PORTRAITS.

THE question of copyright in photographic portraits has been extensively discussed during the last week in Court and in the columns of the daily and weekly press. One might naturally have looked for some decisive, or at least, authoritative, dictum on the subject. No satisfactory conclusion or opinion—none, certainly, which can be pronounced as final—has been uttered. We certainly cannot accept the opinion of Mr. Justice Hawkins that the only way to stop the publication in future is for the person photographed to purchase the negative itself. Nor can we accept the dictum of counsel so learned in the law as Mr. Watkin Williams, to the effect that the copyright of a portrait is by the existing statute "vested absolutely in the artist." We have often stated that the Act is very clumsily worded; fresh sentences being grafted on a clause apparently nullifying preceding sentences. But the whole of the first section must be very carefully read before an opinion can be formed of its meaning. We will quote the section in its entirety before proceeding further:—

"The author, being a British subject, or resident within the dominions of the crown, of every original painting, drawing, and photograph, which shall be or shall have been made either in the British dominions or elsewhere, and which shall not have been sold or disposed of before the commencement of this Act, and his assigns, shall have the sole and exclusive right of copying, engraving, reproducing, and multiplying such painting or drawing, and the design thereof, or such photograph, and the negative thereof, by any means and of any size, for the term of the natural life of such author, and seven years after his death; provided that when any painting or drawing, or the negative of any photograph, shall for the first time after the passing of this Act be sold or disposed of, shall be made and executed for or on behalf of any other person for a good or a valuable consideration, the person so selling or disposing of, or making or executing the same, shall not retain the copyright thereof, unless it be expressly reserved to him by agreement in writing, signed at or before the time of such sale or disposition, by the vendee or assignee of such painting or drawing, or of such negative of a photograph, or by the person for or on whose behalf the same shall be made or executed; but the copyright shall belong to the vendee or assignee of such painting or drawing, or of such negative of photograph, or to the person for or on whose behalf the same shall have made or executed; nor shall the vendee or assignee thereof be entitled to any such copyright unless, at or before the time of such sale or disposition, an agreement in writing, signed by the person so selling or disposing of the same, or by his agent duly authorized, shall have been made to that effect."

It will be seen that the section sets out by vesting the copyright in a painting or photograph in the author or producer. Then comes a proviso to the effect that in case the picture be a commission (as a photographic portrait usually is) then the copyright shall belong to the person ordering or commissioning the work, unless it be by special agreement reserved to the artist. Then comes another provision stating that the vendee—that is, the person commissioning or ordering the work—shall not be entitled to the copyright, unless by a special written agreement with the artist. It follows that without a written agreement between the artist and the person ordering the portrait no copyright is acquired by any one—no copyright, in fact, accrues at all. A most lame and impotent conclusion to such a prolix section, which, we apprehend, can never have been

intended by the legislature, but is probably a result of much tinkering in committee. The issue is that portraits may be copied by unscrupulous photographers, and issued broadcast, without a remedy of any kind, that we can see, being applicable, not even Mr. Justice Hawkins' plan of buying the negative as a preventive.

Mr. Watkin Williams stated in Court, and reaffirms in a letter in the *Times*, that the copyright remains with the portraitist who persists, in defiance of remonstrance, in issuing for sale portraits of beautiful sitters. The *Times* endorses Mr. Williams' opinion, and an attempt is made to establish a distinction between the copyright in the negative and that in the print. With all due deference, we hold that the copyright is in the picture or design, which exists in negative and print alike, and in common.

There are conditions under which, however, the photographer acquires a copyright in portraits and a legal right to vend them for his own profit, independent of the wish of the sitter, and these conditions, we apprehend, prevail in the majority of cases where popular beauties have been sold in every variety of pose and costume. If the photographer produce a photograph of his own choice and intention, the sitter posing before the camera at the request of the photographer, then the copyright vests in the author who produces the work for his own purposes, and is secured in the possession all its advantages by the terms of the Act.

It appears that no one has a copyright in his own face. There is no copyright at common law. Copyright, it is alleged, is entirely a creation of statute law. We apprehend, however, that the cases are very rare in which a photographer would persist in selling the portrait of a sitter against the wish or protest of such sitter. The connection and reputation of a respectable photographer are his most valuable trade possessions; and it would be ruin to anyone to acquire the reputation of exhibiting or selling portraits of his customers against their express wish. The *Times* intimates that there is nothing to prevent an artist obtaining portraits of well-known men or famous beauties, and selling them. In photography, however, it is quite certain no such portrait can be obtained without the consent of the original. And although photography has come in for not a little rating for making popular the charms of those irreverently styled the "beauty women" of the season, it must be borne in mind it could only be done by their assent and assistance. Nay, it must be remembered, that this thing was first initiated at the Royal Academy Exhibition, where the duplicated portraits of one of the ladies, since much photographed, became the cyanoüre of all eyes as a popular beauty.

The attention now called to the defects of the clumsy, obscure, and inefficient Act of 1862 will, it is hoped, enable the improved Bill of Lord John Manners to pass into law without much opposition or delay, as its provisions meet expressly many of the difficulties which have led to discussion in the cases which have recently occupied public attention.

On another page we print some extracts from articles which have appeared in various contemporaries, showing the uncertain state of public knowledge on the subject.

PRESS OPINIONS ON PHOTOGRAPHIC COPYRIGHT.

THE following extracts from various journals on the question of copyright raised by the recent bill cases.

Mr. Watkin Williams writes to the *Times* as follows:—

SIR,—The Royal Commissioners upon Copyright, in setting forth in their report (1878) the existing law in relation to paintings, drawings, and photographs, have been guilty of a serious inaccuracy, which, unless I am mistaken, has been the source and origin of much prevailing misconception as to the respective rights of the artist and his customer in the case of a

photographic portrait made in the usual and ordinary course of business. The language of the report (section 102) is as follows:—"The author of every original painting, drawing, and photograph has the sole right of copying, engraving, and reproducing it, unless it be sold or made for a good or valuable consideration, in which case the artist cannot retain the copyright unless it be expressly reserved to him by agreement in writing." This ignores the statutory distinction between the negative of the photograph and the photograph itself, and places the latter, so far as copyright is concerned, upon the same footing as paintings and drawings, and leads the reader to suppose that, as the law stands, when the photograph is executed for another for a valuable consideration, the artist fails to acquire the copyright unless it is expressly reserved to him. This is certainly a mistake. Take an ordinary example: You go to a photographer to have your photograph taken. You are informed upon enquiry that the charge is two guineas, for which twenty cartes-de-visite will be supplied. You enter the studio. Several negatives are taken; one proves successful. In course of time the twenty cartes are sent, and the money paid. The question now arises, has the artist in such a case the right, without your leave and against your will, to multiply and sell copies of your photograph? To this I answer unhesitatingly that he has such right; and if the language of the statute upon which alone the question turns is carefully looked at and considered in relation to the pre-existing law, the contrary will be seen to be utterly unarguable. The matter stands thus: By the common law no one has a copyright in the picture of himself; and, further, no author of a painting, drawing, or photograph had a copyright in his work. In order to remedy this latter defect, and in the interest of artists, the statute (25 and 26 Vic., cap. 68) enacted that "the author of every original painting, drawing, or photograph, shall have the sole and exclusive right of copying and multiplying such painting, or such photograph and the negative thereof." Thus was conferred upon the artist *prima facie*, and as the general rule, the exclusive copyright in every original photograph made by him, and also in the negative thereof, which is thus pointedly distinguished from the photograph. But then comes an exception, introduced by way of proviso, as follows:—"Provided that when any painting, or drawing, or the negative of any photograph, shall be made or executed for or on behalf of any other person for a good or valuable consideration, the person so making or executing the same shall not retain the copyright thereof unless it be expressly reserved to him," &c.; but in such case "the copyright of such negative shall belong to the person for whom it shall have been made." The result is that the copyright in every original photograph is vested absolutely by the statute in the artist, except in those cases where the negative of the photograph, as distinguished from the photograph, has been made for another person for a valuable consideration. The issue in each case, therefore, is brought back to this simple question of fact—whether, when the original photograph was ordered and the price agreed upon, the bargain really extended to and included the negative of the photograph, or merely the photograph itself. The price and the particular circumstances of each case may determine this question of fact either way; but for all practical purposes it may be safely said that the customer orders the photographs only, and does not pay for the negative. It follows, therefore, that a person having his photograph taken in the usual way and upon the ordinary terms, is powerless to prevent the multiplication and sale of his portrait by the photographer. It is scarcely necessary to add that this difficulty applies only to past photographs ordered unwarily, without foreseeing the danger. Once forewarned, the remedy for future photographs is simple, being merely a question of price. Lord John Manners' Bill to consolidate and amend the law of copyright, brought in but not proceeded with last Session, proposed to declare and amend the law upon this branch of the subject as follows:—Clause 34.—"The copyright in a photograph shall belong to the proprietor of the negative from which the photograph is printed. Where the photograph has been made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit any copy of the photograph without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any copy of the photograph, and, if the copyright is infringed, of taking proceedings in respect of the infringement, as if he were the proprietor of the copyright.—Your obedient servant,

WATKIN WILLIAMS.

The Times says:—

This prosecution has terminated the career of a vulgar slanderer. We trust that it will have the effect of putting an end at no distant date to an anomaly which has come to light in the course of the proceedings. Astonishment is sometimes expressed that respectable ladies suffer their photographs to be exhibited in shop-windows in very dubious company. Inferences altogether too harsh are drawn from this common enough sight. The fact seems to be that the sufferers are sometimes powerless to prevent this unenviable notoriety. Mr. Watkin Williams told the Court on Saturday that Mr. West was desirous to stop the publication of photographs of his wife, and that he was advised that, in the present state of the law, this was impossible. Strange as the assertion is, it appears to be well-founded. Before 1862 no copyright in pictures or photographs existed. Any one could copy a picture or photograph and dispose of it at pleasure. The abuse was so flagrant that Parliament altered the law. But the Act which rectified this anomaly was indifferently drawn. Lord Westbury told the promoters of the measure that, if they wanted their Bill to pass, they should not strive to make it comprehensive and complete, and that they should be content if the Act remedied a few blots. "Make it imperfect," he said, and the promoters of it took him at his word. They made the meaning of the statute so imperfect that some of the clauses, and in particular that which governs copyright in photographs, are very difficult to construe. The Queen's Bench Division some time ago criticised unfavourably the language of the section relating to photographs; and, in his digest of the law of copyright prepared for the Copyright Commissioners, Sir James Stephen expresses his inability to be certain respecting the precise scope of the words of the Act. According to the letter from Mr. Watkin Williams which we publish to-day, the photographer has *prima facie*, and as a general rule, the sole and exclusive right to copyright in a photograph and negative. This, however, is subject to an exception. If the bargain with the photographer is that he is to be paid not only for the actual photographs, but for the negative also, the copyright of the negative will belong to the customer. This, however, is rarely done in practice. A person who goes to a photographer's shop does not think of the negative; he merely orders so many photographs; and if he does so he is powerless, in Mr. Watkin Williams's view, to prevent the sale of his portraits. If this be the state of the law, it is by no means the expression of perfect good sense; and, to make the matter worse, it is not quite certain that the enactment is so clear as Mr. Watkin Williams assumes. The fact is that in 1862, when legislators first busied themselves with photography, they did not distinctly foresee the uses to which it would be put. They did not anticipate that it might be made an instrument of social torture, a not unworthy substitute for the pillory; and even now, when everybody is alive to the existence of the nuisance, its abatement is found to be not at all easy. No one has a copyright in his face. If an artist manages to catch the features and expression of a handsome lady, and commits them to canvas without her leave, she cannot complain. No one can prevent anybody from drawing or painting his house. Even an architect cannot hinder a rival from sketching a building in the construction of which he has exhibited skill and ingenuity. It is impossible to make any laws by which artists will be prevented from sketching celebrated men or well-known beauties and selling their portraits. This is part of the price of fame, and must be paid with due resignation of spirit. But portraits, whether photographs or paintings, which are not taken without leave, stand on a different footing. The customers of a photographer go to him for their own pleasure, not for his profit; they order portraits for the gratification of themselves and their friends; and if the photographer takes advantage of an order given him to strike off a number of copies and to sell them for his own profit, he commits a moral fraud. He has obtained an unfair advantage, and if the law permits him to use it, the sitter has good reason to complain. Even before any copyright in paintings or photographs existed, Courts of Equity interfered to frustrate frauds not unlike those which are now perpetrated without any punishment. If a person happened to get pictures by unfair or surreptitious means into his possession, and took copies which he intended to sell, Equity Judges said that such a practice was improper and must be prohibited. They would not allow—to recall a famous case—publishers to vend etchings surreptitiously copied from the Queen's private collection. They have more

than once said that they would not permit copies of pictures which have never been exhibited or offered for sale to be taken and sold without the leave and against the wish of the artist or owner. They might well have shown as much consideration for the lady who goes to a photographer's studio to have a dozen cartes-de-visite taken for herself and her family, and who finds, to her horror, a month hence, copies of them stuck up in very varied company in a printseller's window. But the law, both judgemade and statutory, is defective, and it needs amendment. Had the Bill brought in last Session by Lord John Manners to consolidate and amend the law upon the subject been fortunate enough to pass, the evil would have been corrected, for it proposed to give any person whose photograph is taken a right to prevent the sale or exhibition of copies of it. Nothing less will satisfy the public mind now that it is impressed by the defenceless state of all persons whose faces are interesting. For the present, however, celebrities must be content to suffer from the enterprise of photographers, or to take care before they consent to sit in front of a camera that all rights in the negative and photograph are clearly conveyed to them. Such is the strange state of the law that at present every one who is famous would do well to call in his attorney before he has his portrait taken.

The Observer says:—

Most of us have, at some time or other, been photographed; have posed before the lens; have gone through the customary ordeal; have had a couple of copies sent for our inspection; and have ultimately been furnished with a dozen or couple of dozen, or, as the case may be, four dozen copies of our features. Photographers, as a rule, are respectable men, whose business it is to conciliate their customers, and it is very seldom that a photographer, even in a country town, will endeavour to attract custom by exhibiting, as a specimen of his art, the portrait of a local celebrity, without having first obtained express consent. If the Dean of Barchester sits for his portrait to the local photographic artist, it is not only understood to be part of the bargain that the photograph shall not be public property, but were the understanding broken the photographer would lose his customers, and would be practically ruined. Of late years, however, a certain unwholesome love of publicity has grown up, and photographs of persons generally known in the world have been sold whole sale. Into the general aspect of the question which has thus been raised it is needless to enter. There are certain persons whose features are, in a certain sense, public property. It is only reasonable that photographs of the Queen, and of various members of the Royal Family, of Her Majesty's Ministers, of Bishops, of members of the Houses of Peers and Commons, of celebrated preachers, authors, poets, actors, actresses, and artists, should be sold by the hundred. It can hardly be called a morbid curiosity that tempts us to fill the conventional photograph album with representations of the Queen, the Prince and Princess of Wales, Mr. Ruskin, Mr. Millais, Mr. Irving, the Earl of Beaconsfield, Mr. Gladstone, Mr. Tennyson, Madame Patti, Miss Ellen Terry, and Mr. Spurgeon. But there are persons who may have notoriety thrust upon them without having sought it. And as we are all photographed upon an average once a year it is important to know how far we can control the issue of our portrait for sale. If a lady has had her photograph taken solely for herself and her friends, and if circumstances have given her a transitory notoriety, has the photographer a right to sell her portrait indiscriminately? It is strange that this point of law should never have been raised, and that we should not yet have had upon it the decision of a competent tribunal. Such, however, happens to be the case, and it is easy to see how the difficulty arises. We go into a photographer's shop, and order a hundred copies of a photograph of our own features, or of those of our wife. The photographer in due course send the parcel home, we distribute the copies among our friends, and we hear no more of the matter until we find our photograph on sale at almost every small shop in England. Some few years ago Bishop Colenso, of all people in the world, woke one morning to find himself famous. His book on the Pentateuch had come out, and there was a demand for his photograph. The demand was at once met by the reproduction by the hundred of photographs already known to Dr. Colenso's friends, and the negatives of which had been taken with a view to private circulation only. But at present, unless very incorrect statements have been given to the world, there must be ladies and gentlemen by the hundred whose photograph is being sold, and a large profit being realized upon its sale, not only without their consent, but positively against their express wish. No man who respects himself cares to have notoriety

thrust upon him; still less does he care to find his wife the heroine of club gossip, and to find her portrait being sold wholesale, with the customary "reduction on taking a quantity." What is a man to do under such circumstances? Is he in a position to institute legal proceedings against those who have thus vexed and annoyed him; or has he no resource except to protest against the liberty which has been taken with himself and his family? The photographer will argue that his contract is only to supply a certain number of portraits. This he has done. He has taken the photograph, the dozen, or two dozen, or twelve dozen copies have been sent in, and beyond this he will contend we have no manner of property in the negative. It was executed for us at our own request, but it is not, on that account, our own; and, in so far as any public curiosity may attach to it, the right of sale and reproduction belongs, it will be urged, to the photographer himself, by whose labour and time, and with whose materials it was originally taken. There are, of course, two aspects to this question. In the first place, we have to ask ourselves whether a man has any copyright in his own features; and, secondly, whether he has any right to prevent the sale of copies from a negative which has been taken for him at his own request.

As to the first of these questions there can be no doubt whatever. The features of any member of the public are public property. No man can declare that he is essentially a private person. He may be unwilling to have notoriety put upon him, but he cannot help it. If the public interests itself in him, he becomes *ipso facto* a public man, whether he desires it or not. And a public man has no copyright in his own features. Any engraver or publisher who chooses may make and issue a portrait of Lord Beaconsfield, or of Mr. Gladstone, or of the Prince of Wales, or of Major Chard, or of Lord Chelmsford, or of Dr. Talmage. Nor would an injunction stop the sale of such portraits. It would be difficult in such a case for the plaintiff to show that he had been in any way damaged, and, indeed, the point is so clear that the question it involves has never been raised, and may be taken as practically settled by common consent. The only case in which a man can interfere with the publication of an engraving or picture representing his features, is where the portrait so produced amounts to a libel. If it be a fair representation of him, then, however much he may object to its sale, he is practically without redress. Photography, however, has for some years past been specially legislated for by statute, and there is an Act of Parliament—25 and 26 Vic., c. 68—by which it is specially provided that, "when any painting or drawing, or the negative of any photograph shall be made or executed for or on behalf of any other person for a good or valuable consideration, the person so making or executing the same shall not retain the copyright thereof, unless it be expressly reserved to him by agreement in writing, signed by the person for or on whose behalf the same shall be made or executed." But on the other hand, the copyright does not even vest in the person for whom the photograph has been made, unless there has been at the time an agreement in writing between him or her and the photographer to that effect. And accordingly, if we are to accept the authority of Dr. Shortt, the latest writer on the law of copyright, the copyright in a photograph is altogether gone "unless (1) it be expressly reserved to the photographer by agreement in writing, or (2) be reserved by a similar agreement to the person for whom it has been taken. If, in other words, Mr. Jones has his photograph taken for him by Messrs. Brown, the right to reproduce copies from the negative belongs neither to Mr. Jones nor to Messrs. Brown, unless there has been some positive agreement at the time embodied in writing. Photographers have always avoided such an agreement, and contended that by the custom of the trade the negative is their own, and the custom has practically been always recognized. We are not aware that they have ever yet definitely claimed to possess the right of reproducing copies and selling them. As has been said, the question has never yet been raised; but there can be little doubt as to how it ought to be decided. A man has no right whatever to prevent a portrait of himself being sold unless he can in some way claim property in the portrait itself or in its original, and his claim to a particular photograph will be found, if we consider the matter, to rest in the fact that the original negative was taken for him with his own consent. Let us, for instance, suppose him to be a public man, who, on some particular occasion, delivers an address to a large audience. During the course of the address, and without his consenting to the fact, or even knowing it, his photograph is taken by a photographer. Clearly, under such circumstances, he himself would have no right to the photograph. We can easily test the matter

by asking what would happen if an injunction to stop the sale of such a photograph were issued. But it is another matter where the original negative has been specially taken by the consent of the person whom it represents. Common sense would suggest that the copyright in such a case should belong to the person for whom the photograph was taken; and as there was some doubt whether this were the law or not, the Government last session introduced a Bill to settle the matter, which, however, did not pass further than its first reading. According to this measure, the copyright is to belong to the proprietor of the negative from which a photograph is printed. But where the photograph has been made on any one's order for valuable consideration, the proprietor of the copyright will not be entitled to sell a copy without that person's consent, or to expose it for sale, or exhibit it. And the person who orders the photograph is to have the same right of preventing the sale, the exposing for sale, or the exhibition of any copy, as if he were the owner of the copyright. Similarly, he is to be empowered to take proceedings in case the copyright be infringed. With regard to the duration of the copyright, which is at present for the lifetime of the artist, and seven years afterwards, the proposal is to fix it at thirty years from the date of publication. Were this measure to become law there would be at once an end to the legal difficulties which now exist. For at present, evidently, a doubt can be raised as to the copyright in a negative of a photographic portrait. The moral aspect of the case is clear. If a lady goes to a photographer, and pays him a handsome sum—and photographers' charges are seldom moderate—to take her photograph, and to provide her with a hundred copies of it, by all reason and justice not only the copies themselves, but the negative from which they are taken, and the right of reproducing copies from that negative, belong, or ought to belong, to her. Copyright, however, is no part of the common law. It is purely the creation of statute, and the issues we have suggested have never yet been contemplated by statute law, and so remain altogether unlegislated for. In short, the question of a man's copyright in photographs of himself is a *casus omissus*, and will so remain until legislated for. Even should the Bill which Lord John Manners last Session introduced become law, it will still remain an open question whether a man can forbid his photograph being sold, provided it has been taken without his permission, and he has not paid for it. If, for instance, he is, as we have already suggested, photographed while delivering a public lecture or address, it will still be open to argue that his features are as much public property as are a landscape or a well-known view, and that, in reproducing them, and multiplying copies of them by the camera, a photographer does him no harm. His copyright will, in a word, be limited to those cases where the original negative has been executed for him at his own request, and he has paid for its execution.

The *Weekly Despatch* says:—

It is the privilege of Mr. Cornwall West to be the husband of Mrs. Cornwallis West, and in that capacity he appears to have suffered a grievous wrong at the hands of some photographer or photographers unknown to us. And, according to the merciless processes of logical deduction, had it not been for the offending photographer or photographers in question the man Rosenberg could not have been put under his trial to answer to one of the counts in the indictment preferred against him. Seeing so many portraits of Mrs. Cornwallis West exposed in the shop-windows, this thoughtless fellow jumped to the conclusion that the pictures were exhibited and sold with the sanction of the fair original and her husband; and, adding to lack of business caution a too high opinion of the powers of satire possessed by his literary staff, he published comments which doubtless in his and their opinions partook of the nature of humour. Only they who have made the attempt and succeeded know how difficult it is to be funny; and judging from internal evidence, Rosenberg's scribe was not possessed of that experience. Hence he overstepped the narrow line which divides sarcasm from scurrility, with what result to his employer we know; for Mr. Justice Hawkins does not, as far as we can see, intend to take a particularly lenient view of the case. That the portraits of Mrs. Cornwallis West—some of them in doubtful taste—were exposed for sale contrary to the expressed wish of that lady's husband there cannot be a question of doubt, for the gentleman himself has sworn it in evidence. Surely, then, there should be some law to reach the offending publisher, assuming the publisher to have offended. So far as we understand the law of copyright bearing on such a case,

which was not made quite clear yesterday, in spite of the vigorous protestations of Mr. Watkin Williams, it seems that when a money payment is made to a person for producing a portrait the copyright rests with the purchaser; but where no such consideration has passed, the right to reproduce the original is vested in the artist or handicraftsman, the maker of the likeness. From the explicit assurance of Mr. Cornwallis West we gather that his wife's negatives have been in every instance ordered in the regular way of business, and paid for. Indeed, anyone who assumed the contrary would not only be guilty of an impertinence, but would infer that Mr. Cornwallis West had no legal ground of complaint against the publisher of his wife's portrait. The timely interference of this outraged gentleman throws an entirely new light upon the much-discussed question of the propriety of offering for sale the photographic likenesses of ladies of rank—otherwise undistinguished. And but for this episode how could the common people have known that the simpering presentments of the Duchess of This and the Countess of That and Mrs. So-and-So were retailed at a shilling apiece in defiance of the protests of the noble and gentle ladies and their legal lords? If Mr. West's case is not exceptional, the sting is at once taken out of the sneer of the cheap satirist when he rails against the fashionable world for permitting the likenesses of rich and modest ladies to occupy the position of matter in the wrong place in the album of the typical 'Arry. It has been said that 'Arry, an ignorant and coarse sensualist, gloats upon the forms of the fashionable beauties of the day. And this is a reflection horrible to contemplate. There are, however, numerous classical stories of youths having fallen desperately and passionately in love with the vivid creations of the great Athenian sculptors, and possibly what happened in ancient Greece may have been repeated in modern England. Of course, the argument that because a callow snob may fall in love with a lady's likeness, therefore ladies shall not have likenesses taken, is of itself absurd. But if we go further and find that the unnecessary and uncalled-for cheapening of these commodities encourages such unpleasant familiarity, an appearance of reason is given to a contention which otherwise would be unsupportable. The man Rosenberg, who was found guilty yesterday afternoon, has already suffered imprisonment, and will probably suffer more, for incautiously enlarging the bounds of an example set him by more respectable journalists. And therefore it is to be regretted that Mr. Cornwallis West and the rest of the noble and gentlemen who may be sufferers in their feelings through the illegal obstinacy of publishers continuing to issue likenesses of ladies after having been warned to desist, did not long ago write to the newspapers explaining the true facts of the situation. It may be urged that the newspapers would not have been compelled to print their explanations, but for our own part, we are inclined to the opinion that every courtesy would have been accorded by the Press to citizens so grievously wronged in a delicate private matter. It is almost a pity that we have no law making it imperative on newspaper editors to insert a correction of any misstatement concerning an individual, even where such misstatement has not been damaging; although the more this question of ladies' likenesses is considered, the more apparent becomes the damage inflicted upon innocent members of the upper classes. We have frequently seen allusion made to the anomaly of exhibiting the portrait of some fair and chaste votary of fashion cheek by jowl with those of women whose sole title to kinship with our mother Eve in Paradise before the fall is the fact that they are shown naked and not ashamed. But how unreasonable is such an objection. The more or less lovely female members of the aristocracy are not responsible for the bad taste of a shopkeeper to whom a proper sense of the fitness of things has been denied. As well might the admirers of Lord Beaconsfield complain that his photograph was hung up alongside that of Dr. Lynn. It does not follow because one is a professed juggler that the other is a juggler also. In the old days of the Keepsakes, Annuals, and Books of Beauty, what purported to be portraits of noble and gentle ladies were published from time to time without unfavourable comment from the Press. Such portraits, however, were seldom sufficiently like the originals to induce personal allusions, and, moreover, they were published at prices which put them out of the reach of the 'Arrys of the period. Unfortunately the likenesses of the reigning so-called beauties of the day, although improved as far as possible by retouching upon the negative, retain too much of the form of the originals not to make the comments which they call forth exceedingly painful

to the friends of the sitter; particularly as, from the evidence of the shop windows, it would seem that some ladies set up for beauty on a slender capital, and thus encourage that sneering attitude of mind which is one of the greatest drawbacks of an irreverent age. On every ground, therefore, let us hope that we have seen the last of the Photographic Beauty Craze, for the negative quality of prettiness is an insufficient claim to publicity.

Mr. Bassano writes a letter to the *Times* which throws some light on the alleged difficulty of checking the publication of photographic portraits of private persons.

SIR,—By your remarks on the publication of Mrs. Cornwallis West's and Mrs. Langtry's photographs, the whole body of photographers is placed in a most unenviable and, indeed, invidious position, and, unless some defence is offered, the members will be looked upon as an unscrupulous class of the community, whose greed is superior to their sense of honour, and whose only consideration is to put money in their pockets—honestly, if they can; if not, otherwise. Mr. Watkin Williams, Q. C., stated at the trial that "Mr. Cornwallis West took every step in his power to prevent the photographs of Mrs. West being published." I appeal to your sense of justice to allow me, as a photographer who has had the pleasure of taking negatives both of Mrs. Cornwallis West and Mrs. Langtry, to say that Mr. Cornwallis West did not appeal to me, at least, in vain. Immediately upon his personally expressing his disapproval of the publication of Mrs. Cornwallis West's photographs (permission for which had been granted), I withdrew every copy of the portrait from circulation, and countermanded several orders then in course of execution. I was not even aware, until I saw Mr. Watkin Williams's letter in this morning's issue of the *Times*, of the power which the law gives to photographers with respect to negatives they may have taken, my sense of what was due to a client who unsuspectingly placed himself in my hands being sufficient to protect him from any unfair use being made of that which he had a moral, if not a legal, right to have the entire control over—namely, the issue of copies from the negative which he had intrusted to me to produce. A very important omission appears to me to occur in Clause 34 of the Copyright Bill introduced by Lord John Manners last session. It is therein stated that no copies of a photograph shall be sold (or published) without the consent of the "person" whose photograph has been taken. The word "person" is not sufficiently accurate, because in the case of a married woman a dispute might arise if she had given consent to the photographer for the publication of her portrait without, or in opposition to, the wishes of her husband. Therefore it should be definitely stated in such a case that it should be necessary to procure the husband's authority before proceeding to publication.—Your obedient servant, ALEXANDER BASSANO.

25, Old Bond Street, October 28th.

GERMAN CORRESPONDENCE.

BY DR. VOGEL.

PHOTOGRAPHIC BLOCK PRINTING IN JAPAN—RESTORING THE BATH—CARVALHO'S PAINT FOR STUDIOS.

It has often been tried to obtain printing blocks with the help of heliography, and with much good success; but while an easy way to produce a printing-block with the same rapidity and precision as a silver picture has not yet been found, it looks very much as if the far East would present us with such a process.

Baron Stillfried, now professor of photography in Japan, and superintendent of the photographic department of printing, reports that a Japanese possesses the secret to make printing-blocks with the help of photography, by using a sensitive substance, long known to the varnishers in Japan. This substance is red-brown, soft, like putty, and has the property to harden in the light, and to become insoluble in certain solutions. With the doughy substance a wooden block is coated, smoothed with rollers, and the whole is lighted under a negative. The lighting lasts in the sunshine a whole day, and the lighted parts become thereby hard like stone, and dull, the rest remaining soft. It is now easy to remove the soft parts with a wooden knife. The hard parts resist the knife, and the whole is then worked with an instrument resembling a comb, or the

soft part is removed with a solution. The remaining relief can be hardened in the light and used at once for printing. More than this Stillfried could not ascertain. The Japanese have always been very reticent in regard to the fabrication of their excellent varnishes, and it therefore might not be easy to obtain any further information about this sensitive varnish.

In your last number I found, under "Gihon's Gatherings," some very valuable items; among others, one entitled "How to Sun a Bath." I believe the recipe to be good, especially for America, where there is no lack of sunshine; but, nevertheless, the process requires several hours of preparation in summer. The bath has to be neutralized first, then acidified again after sunning, &c.

Much easier the same result is obtained without the sun, by using permanganate of potassium, which was first recommended by Crookes. For twelve years I have used this substance, and do not need to sun a bath. A few minutes only are necessary for the purpose, and I never had a failure, and long ago I recommended this way of restoring a bath instead of sunning, but it seems as if not all photographers were successful with it. Usually the mistake is committed of using entirely too much permanganate, thus neutralizing its beneficial effects. I take one part permanganate, 1 part nitric acid, dissolve in 100 parts water, and of this solution I put one drop into the silver bath which is to be restored. If the bath now contains organic substances, the beautiful rose colour which the first drop produced will vanish quickly again. Then another drop is put in, always shaking, and if the rose colour vanishes again inside of a minute, another is added, and so on until the point is reached when the rose colour will remain permanent while shaking, when no more permanganate must be added. In this way a bath may be restored in five to ten minutes with permanganate. If no organic substances are in the bath, the first drop already will impart to it a rose colour, which will last several minutes. I had baths, with which I had to use 20 to 30 drops of solution of permanganate, and others which were restored already with 3 drops. But too much of permanganate is always injurious, and very apt to produce insensitiveness or fog. Of course, only organic matter is removed from the bath by permanganate, but not so all other defects (for example, excess of iodide of silver). I know people who imagine they can remedy all and every defect with permanganate of potash, but it cannot be done.

Since the new patent law has come into existence in Germany, a great many photographic patents have appeared. In a year forty to fifty photographic novelties have been patented, but real value only a few of them possess. Some of these patents are already extinct again, as they realized so little to the patentees that they were not inclined to pay the patent tax for another year, though the same amounts only to about \$12. The undeniable worthlessness of many patents has had the result that everything patented is viewed with suspicion. Formerly, when only really new and practical inventions were patented, the case was different. I see that recently some American inventions were patented here, and I do not believe that they will amount to more than the other patents. Lately a patent has been applied for for Carvalho's orange-pea-green paint for studios. I have read the application, and must own that I have seldom seen so much nonsense condensed in a few pages as in this report. It is undoubtedly obvious that the shadows of our models, if they shall be effective for photographic purposes, have to be lightened by photographically effective lights. Such a light is the white or blue, and therefore the reflecting walls of our studios must be painted blue, white being too glaring for the eyes. If anybody asserts having obtained better results in a studio with orange-pea-green walls than in one painted blue, he simply deceives himself, and such a delusion happens not unfrequently with photographers. Only a short time ago a photographer brought me some "lightning" collodion of which he seemed to think wondrous, but which I found,

upon testing it in my studio, much less sensitive than my own collodion.

If a photographer, as I read in some English paper, experiments to-day in a blue studio, and the day after tomorrow in one painted pea-green, and thinks he can perceive that in the latter case the picture is much better, I do not place any weight whatever upon the fact, because no man, not even the very best photographer, can judge what change the chemical strength of light has undergone in three days. The better result may be traced to any other influence, but not to the pea-green coat of paint; and anybody who will prepare two reflecting screens of equal size, painting the one light blue with ultramarine, and the other pea-green, and place first one and then the other on the shadow side of a person, taking one right after the other, in equal light, can judge for himself how much the pea-green colour is worth.

Talk in the Studio.

CETEWAYO.—We have been favoured by Messrs. Marion and Co. with copies of the portraits of the dethroned Zulu chief, taken by Messrs. Crewes and Van Lahn on board the steam ship *Natal*, at Cape Town, as recently described in our pages, and also portraits of a group of his wives. These are, we believe, the only genuine portraits of Cetewayo, and the only ones likely to be issued, as he does not intend to sit again. Possibly, since the Lord Mayor's homily on the grossness and impropriety of Zulu fashions and sartorial customs, Messrs. Marion may hesitate to issue these portraits, as it is a serious thing to shock the taste of a potentate with fine and imprisonment within his power.

PORTRAITURE ON GELATINE PLATES.—Our readers are familiar with the name of Mr. A. Wellesley Turner as one of the earliest and most intelligent workers with carbon. We have recently been favoured by him with some charming specimens of card and cabinet portraiture, which illustrate a fact we have often had occasion to note, namely, that the most skilled and intelligent workers are generally abreast with every stride of progress in the art. The examples of portraiture sent by Mr. Turner are from gelatine plates, and are in every way fine examples of high-class work: delicate, yet vigorous, finely modelled, without any approach to coarseness. Several of the portraits are of children, illustrating the rapidity of the work. It is very gratifying to us to find that the work of one whose communications have so often been of service to our readers places him beyond question in the highest rank of portraitists. Mr. Turner has been good enough to promise details of his gelatine experiences to the readers of our forthcoming YEAR-BOOK.

A PHOTOGRAPHIC ACTION FOR BREACH OF CONTRACT.—At the Clerkenwell County Court of Middlesex, before Mr. Judge Whitebread, the case of *Henderson v. Kurtz* was heard, in which the plaintiff, a photographer of Glasgow, sued the defendant in the same profession, carrying on business in Canonbury, to recover the sum of £20 for alleged breach of contract under the following circumstances. It appears from the plaintiff's statement that in consequence of an advertisement in May last he entered into negotiation for the purchase of defendant's business, which, with good will, stock, and the remainder of a lease, was to be sold for £150, and that in consequence of the defendant's representations he came from Glasgow to see the business, and paid the defendant £20 as a deposit; the balance was to be paid on the completion and transfer of the lease. The plaintiff said that from subsequent enquiries he had made, he found the value of the business grossly exaggerated, and that instead of three and a half years, there was only about one and a half years unexpired term to run. The plaintiff here put in copies of letters he had written to the defendant for the return of his money, failing to obtain which he brought the present action. The defendant being called, said he never told the plaintiff there was any three and a half years to run, and that his business was well worth what it was represented to be. In reply to the learned Judge, defendant said he had no evidence to call as to the value of his business, upon which the learned Judge said it was evident that the case had been misrepresented to the plaintiff, and therefore he should order the defendant to return the deposit of £20 he had received, as well as pay the plaintiff's travelling expenses from Glasgow and back. This judgment was accordingly entered in favour of the plaintiff.

AT MARYLEBONE, Alfred Paul de Witt, 32, photographer, of

103, St. John's Wood Terrace, St. John's Wood, was brought up on a warrant before Mr. Mansfield by Chief Inspector Shore, of Scotland Yard, for unlawfully and wickedly selling certain obscene printed photographs to St. Leger Lonsada, an officer of the Criminal Investigation Department. Mr. Collette prosecuted for the Society for the Suppression of Vice; Mr. S. B. Abrahams defended. Mr. Collette said that the prisoner was a photographer, and besides carrying on a legitimate business, it was known that he photographed bad characters from all parts of London. He also produced photographic pictures from negatives sent to him for the purpose. This case originated under a warrant taken out under Lord Campbell's Act, and a warrant was also obtained to arrest the prisoner. St. Leger Lonsada said that he received information from Chief Inspector Shore, and also from Mr. Collette, and then went to 103, St. John's Wood Terrace, on the 13th inst. He there saw the prisoner and told him that he wished to have his photograph taken. After having sat for his portrait, he asked the prisoner if he had any other photographs, and he answered that he had a few negatives, but he seldom kept them, and generally destroyed them after he had taken them. The witness remarked that he should like to see them, and the prisoner showed him the negative produced. The witness ordered some copies from those and other negatives which prisoner showed him. He also purchased a photograph, and then left, the prisoner telling him that the others would be ready shortly. On the following Monday the prisoner handed him the six photographs produced. The witness had paid him £1 9s. 6d. for them and his own photograph on the previous Tuesday. The witness took the pictures to Scotland Yard and showed them to Chief Superintendent Williamson, and by his instructions he called on Mr. Collette the next morning. The witness was present that morning at the prisoner's house with Chief Inspector Shore, when the negatives produced were seized. They corresponded with the pictures he had bought. He recognized among another parcel of negatives now handed to him, and which was seized that morning, two negatives that the prisoner had shown him. Cross-examined, the witness said that the prisoner told him the negatives did not belong to him. He pointed out in a book the name and address of the person to whom the negatives belonged. He also gave up certain negatives. There was no attempt at concealment. Chief Inspector John Shore said that in the morning he went with the last witness and another officer to the prisoner's house and told him that he was an officer of police and held a warrant for his arrest. The prisoner produced six photographs and four negatives, all of which were obscene. The witness pointed out that the negatives did not represent the photographs, and the prisoner then sent his man upstairs for some others from the studio, and eight more were handed to the witness of an obscene character. The prisoner said that he had taken the eight negatives for a gentleman, and the six copies were made for him also. Four negatives, he said, he had taken as works of art, and should after a time destroy them. He did not think there was any harm in keeping them. He was told the harm was in selling them. He was asked if he had anything to show that what he had said about the negatives was correct. He showed the witness an entry of £2 15s. 6d. in a book with reference to them, and also another entry with respect to photographs from them. There was a name on the book, but the Court did not think it was necessary for the witness to make it public. Mr. Collette observed that this person might be indicted with the prisoner in this matter. Mr. Abrahams said that the prisoner would reserve his defence, and he was then committed for trial, the magistrate consenting to take two sureties in the sum of £40 each for his appearance at the Sessions. A summons was applied for under Section 2 of Lord Campbell's Act to show cause why the photographs should not be destroyed, and it was at once granted.

To Correspondents.

... The pressure upon our columns this week arising from the large amount of matter on the subject of photographic copyright—all of interest to photographers—compels us to leave over much matter in type, amongst which we may mention a notice of portraiture at the Photographic Exhibition, the continuation of "Looking Back," Press Opinions on the Exhibition, Dr. Monckhoven's Lecture on Gelatino-Bromide of Silver, and some other matter.

H. RICHARDSON.—The transparent compound used for making pictures of this kind transparent is white wax. Sometimes castor oil is used, sometimes paraffin, sometimes Canada balsam; but in the case in question probably white wax, or one of the encaustic pastes for which we have often given recipes.

THE PHOTOGRAPHIC EXHIBITION.—Several correspondents ask us how long the exhibition will remain open. We have repeatedly announced that it will remain open until the 13th of November. It is open daily from 10 till dusk, and on Monday and Saturday evenings from 7 till 10 o'clock.

BUMBLE BEE.—The quantity of ferridecyanide is one drachm, just the same amount, in the same proportion of water as the persulphate of uranium. The solutions are mixed in equal proportion when required for use, and after filtering add the few drops of gold solution. A dipping bath is the best mode of using. The formula has appeared in several YEAR-BOOKS.

A STRUGGLING PHOTOGRAPHER.—We do not know whether the gentleman in question will contribute the promised details in next YEAR-BOOK. We do not at present, indeed, know his whereabouts. We shall endeavour, however, to give the requisite information.

H. COX.—We have not yet received the information promised, but hope to do so shortly. Your letter contained no stamp or stamped and addressed envelope.

AN ENGLISH RETOUCHER.—We cannot give you advice or aid as to obtaining an engagement as retoucher in France. The only plan will be to advertise in the French journals, or to make special application to French photographic establishments. We should think the most likely journal would be the *Moniteur de la Photographie*, address, 3, Rue Talma, Passy, Paris.

COLOURIST.—The plan of colouring photographs at the back, both in oil and water-colours, has frequently been patented, but we do not think any valid patent is now in existence which will interfere with you if you wish to practise the method. It is simplest and most effective in oil. One effective method consists in colouring a vigorous impression somewhat strongly, and then superimposing accurately upon it a light delicate impression which has been made transparent. But there are many modifications of the idea which ingenuity will suggest.

YOUNG CHEMIST.—Various metallic salts are more or less sensitive to light. You will find Hunt's Researches on Light valuable in your investigations. The salts of copper and zinc, of which you say you have an indefinite recollection as being described as sensitive, are probably the following. If a concentrated solution of sulphate of copper (blue vitriol) be mixed with a concentrated solution of bichloride of zinc, a white precipitate of perchloride of copper is formed, which blackens when exposed to light. This quality is only present whilst the precipitate is moist, and disappears on drying, as does also the blackness previously assumed.

J. T. B.—The money granted by the Government for the encouragement of original research is, we believe, always placed under the control of the Royal Society, and is generally set apart by that Society for the purposes of special research definitely indicated and placed under the charge of special investigators appointed to the work. Such money rarely or never finds its way into the hands of private investigators, however valuable their labours or needful the assistance. The only chance would be to communicate with the Royal Society through its officers, all courteous gentlemen. They are Professor Stokes and Professor Huxley, honorary secretaries, and Mr. Walter White, general secretary. Address them at Burlington House, where the Society's rooms are.

DRY PLATE MAN.—We believe that the decision of the committee to whom the matter was entrusted will be made known early in the session now coming on, possibly at the first meeting. The subject has been under active investigation. Time, to test keeping qualities, was necessary before a decision could be made. Some of the competing plates were sent out, we believe, on a voyage to the Tropics and back to test them satisfactorily. Your question as to whether anything has oozed out as to probable issue is scarcely a fair one. If it had, it would be wrong to repeat it publicly.

COPYING OLD PORTRAITS.—A correspondent whose letter is mislaid, requires information about the possibility of obtaining a good copy of an old and somewhat imperfect portrait. We have seen amazingly fine copies of old, imperfect, and faded photographs produced by various photographers. The memorial portraits of which our correspondent speaks as having seen near Trafalgar Square are by Mr. Piercy, a very capable artist, who has made a speciality of this kind of work, which he accomplishes with very great success, supplementing the appliances of photography by skill as an artist with the pencil. The address is, we believe, No. 12, Pall Mall East; it is next door to Trafalgar Square. Mr. F. Piercy is the artist's name.

Several correspondents in our next.

The Photographic News, November 7, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY IN THE NAVY—GULLS AND SWALLOWS—THE SWEDISH EXPEDITION.

Photography in the Navy.—It is a strange thing that, while our Army makes such good use of photography, and prescribes a course of instruction in photography to staff officers and officers in the Royal Engineers, the Navy takes little or no interest in the art. In the Royal Naval College at Greenwich, if the camera does make its appearance occasionally, it is scarcely in an official manner, and it is only because officers in the navy are sometimes amateurs that we get pictures and photographic records of the places they visit. It is usually the surgeon or assistant-surgeon on board that practises with the camera, he in all probability being the only man who has a convenient place to serve as a laboratory. But the combatant officers count many competent photographers. His Royal Highness the Duke of Edinburgh, it may be remembered, is—or, at any rate, was—a practised photographer, for recently he seems to have devoted his leisure more to the production of soft music than soft sounds. The name of Captain Turton, R.N., is also familiar to our readers as an officer of the navy who is an accomplished photographer; while in the case of the last Polar Expedition, under Captain Narcs, we have several examples of naval photographers, the results of whose labours are among the few objects that remain to us as *souvenirs* of that voyage. In an interesting account that recently appeared in the papers of a visit to Pitcairn Island by Her Majesty's ship *Opal*, we find that a series of views of the settlement and its inhabitants was taken by one of the officers of the *Opal* who was an amateur photographer, and happened to have his camera with him. From the fact that much interest has been aroused in connection with this Island, and that it is not visited sometimes for a twelvemonth together, it is very likely that the photographs thus secured will be of considerable value, and doubtless in all quarters, official and otherwise, they will be eagerly looked for. Under these circumstances it is a pity that photography is not officially recognized in the navy; there must be so many instances in which, if ships were provided with photographic apparatus, their officers could render valuable service at the various stations and places they visit. Reports that are sent home by naval officers relating to coast or harbour works, or the possibility of making the same, or respecting surveys that have been made, would all be enhanced by means of photographs, and doubtless a practical naval officer who is also a photographer could suggest countless other applications to which the camera might be put with advantage. We supply most of our big armoured ships with an officer learned in chemistry and electricity for torpedo work, and he would be specially competent to supervise photographic duties and photographic supplies. As it is, there is no one officially entrusted with a camera throughout the navy, and if it were not for the amateurs among the officers, who appreciate the value of the camera to such an extent that rather than be without the means of photographing they purchase one out of their own pocket, we should never get a glimpse of the beauties of Pitcairn Island, and of other distant lands, to say nothing of photographic records and pictures of technical work. When the Arctic Expedition was ordered to be provided with photographic apparatus, and to carry one or two officers versed in photography, it was found that none of those selected for service in the *Alert* and *Discovery* knew how to coat or develop a plate. The consequence was that they were put through a course of hurried teaching, and instead of being able to rely upon their own judgment in selecting their outfit, were compelled to call in advisers to help them. Providentially, the War Office was able to come to the assistance of the Admiralty in this matter, and placed the services of two of their offi-

cers, Captain Abney, R.E., F.R.S., of Chatham, and Mr. Baden Pritchard, F.C.S., of the War Department Photographic Establishment at Woolwich, who were able to give the necessary aid. But the time has now come for the Admiralty to consider whether they should not take steps to include a camera and its requisites among the stores of a sea-going ship; and from the fact that we have now rapid and trustworthy dry plates, the uses to be made of photography are even more numerous than formerly. It is true that dry plates, as a rule, will not stand a sea voyage without special protection, but this would, no doubt, be devised, if our naval officers had the opportunity of trying.

Gulls and Swallows.—We wish photographers would try to reproduce some other birds on the wing besides the gull and the swallow. It is not the birds so much as their names that we object to. Mr. Robinson, we verily believe, only showed his photographs of gulls for the purpose of worrying critics, and, so far as we are personally concerned, we don't like being worried. Supposing you have, at one time or other, expressed a belief in the bona fide character of such pictures, it is not pleasant to be continually reminded of your dictum. On after occasions, when you are holding forth on the merits of this picture or that for half an hour, getting, perhaps, rather hot in your arguments, it is not nice for a bystander to take you up coolly with, "How about Mr. Robinson's gull?" As humble critics, we protest against being taken in. And, now, as if your capacity for gulping down *canards* were unlimited, people ask with a wink, how about Mr. Gale's swallow? We object to be gulled, or being asked about our capacity to swallow. We are no more liable to be taken in than other people. When Mr. Robinson's picture was under discussion, there appeared several letters written in these columns, written by that gentleman, on the subject of "Sea gulls and others," and we suppose now that we shall be treated with communications anent the swallow and its victims. Why, therefore, we ask again, should the gull and the swallow be picked out by photographers, unless, indeed, they are meant to be symbolical, and put forward with the sole intention of worrying critics?

The Swedish Expedition.—It is interesting to learn that the Swedish expedition, which was recently successful in making the voyage by the Arctic Ocean along the northern shores of Europe and Asia, was provided with a camera, and brings back with it some valuable photographs. These were taken with a view to illustrate the report, which is shortly to be issued, of the voyage, one of the most remarkable in modern times, and will tend to support, we are told, the opinion of those who took part in the expedition, that the route is a practicable one for steamers. The English edition of the work is to be published, we believe, by Messrs. Sampson Low and Co., and will, no doubt, command general attention.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER IX.

I BECAME THE OWNER OF A NICE QUIET BUSINESS.

I DO not know if you will find this paper so edifying as some of the foregoing, but I flatter myself you will find it more useful in its aim: it is especially addressed to young men who may have an ardent wish to rush into business, and become their own masters. Before I start I may say that I mean to tell a plain, unvarnished tale—to speak the whole truth, &c., and otherwise hold myself up to all such ambitious young men as an example, but to no one as a pattern. It was not inclination, so much as circumstances that led me into business on my own account. I had been happy—perfectly happy—in my roving, *ignis fatuus* sort of life! I had no regrets—no cares—and troubled myself little about the future. I could always make more than I spent, and, in fact, very often discovered myself to be in better circumstances than those I served. I had certainly

met with eccentric characters—men with low and grovelling ideas—men with wild and Quixotic notions—men with noble aspirations—men with extravagant ideas, and men with none—good men and bad—honest men and prigs! Yes; it would be almost an impossibility for a man who has travelled so many years not to have met with despicable employers—mean, pitiful, little wretches.

"Shadows, my lord, beneath the soldier's notice!" And as such I shall pass them over, merely saying that with the exception of this latter class, I managed to rub along on fair terms with them all. With this I have reason to be thankful, for I believe there are some employers, respectable as the world goes, who seem to forget entirely that the servitor is of the same flesh or blood, or that those who

"Are born with fortune's yoke about their necks,
And *that* is gall in itself enough!"

I will slip over a few years, and briefly inform you that I have become a staid, sober, and devoted Benedict. A few years slipped over in peace and quietness, when death entered our little home. The place, the house, became distasteful to us, and, to make a long story short, I gave up my situation in one of the best houses in the north of England, and removed to London.

It was the end of autumn. I was a month in London before I began to be disheartened. But I had then tried everywhere and everything—I had left no stone unturned; my advertisement appeared regularly in the photographic papers; I had called at the wholesale houses, and left my name and address; I had gone up one side of Baker Street and down the other with a pocketful of certificates and a bundle of specimens, but all to no purpose. It was a frost—a biting frost—and I was locked out in it. Now it was not a case of distress with us, as you shall find, but only an eager wish that we might be settled once more, and get out of the dingy lodgings—we were in a quiet street off the Goswell Road—and have once more a home of our own, that kept us awake half the night. That wish was the ruin of us! It was a very natural and simple wish to bring us into trouble, was it not? Now I shall tell you how it happened.

One bright sunny day, I found myself wandering and brooding—not a thousand miles from the "Angel" at Pentonville, nor even a hundred from the "Cock" at Highbury—when suddenly I found myself before a little house occupied by a photographer: the show cases were trim and clean, and the specimens good. It was just such a place as one would suppose where a quiet decent living might be made. The situation was capital (so one might have thought) either for a connection or chance. "Ah!" thought I, "what a happy beggar must the owner of this spot be, with a nice little wife and a nice little business; and a bit of garden behind where he can actually sit beneath his own vine and fig tree on a Sunday evening and puff his mild Havanah! Heavens! it is Elysium!"

With such thoughts I wound myself up a narrow staircase, and stood in a room decently furnished and hung round with specimens. Not seeing anyone, I coughed. It had the desired effect, for instantly a tall, thin man issued from a cupboard at the other end of the room. This cupboard was the dark-room. He was evidently a dirty operator, to judge by his long hands, for they were streaked all over with pyro and silver; something had tickled his nose in the dark room, and in scratching it he had given it a smut as well. Fancy the effect of such an apparition upon a nervous child or a fastidious lady! After courtesies had passed between us, during which he smiled all over, evidently thinking he had got a sitter, I dispelled the illusion by asking how he found business, and hoped he had use for an assistant.

"I wish to the saints I had!" he ejaculated fervently. Then, seeing a droll look on my face, he qualified his exclamation by adding, "for your sake."

The ice being broken now we went at it tooth and nail.

I had to tell where all I had been, and he had to show me over the shop, and let me see the enormous collection of negatives his predecessor had made. "He made quite a fortune, my predecessor did, and went off to 'Merricker to spend un. As for myself, I finds as 'ow the purfession don't agree with me, so I'm determined to sell hout."

"What! Sell it! Ain't it paying, then?"

"Paying, I should think as it his!" indignantly retorted Mr. Jinks, "I tell yer it's me health demands a change. Pay! it pays me well enough, and if any young feller as knew the business and pushed it, you know, and had a wife as would assist him in the shop, it's a regular little sit down, I kin tell ye! Ye'll excuse me, I know," he continued, looking at his watch, "but it's one o'clock! No, don't go away! Hi'm a man of regular 'abits, hand it is the hour when I has my forenoon snack! 'Ere, boy," he called, "jest get me a nice rump steak from over the way, potatoes hot, and some vegetables! And hi, boy! don't forget the stout and a penn'orth o' puddin'."

Now, there was nothing extravagant in this order, but the tone in which it was given did more to impress me with the fact that there was a snug little business doing than all his former talk, and I departed more than ever impressed with the belief that the owner was a particularly lucky beggar.

There was a long talk and a calculating of the needful that night in a second pair back, Charles Street, Goswell Road, the result of which was a second visit paid to that enviable little business. Jinks evidently knew he had got a nibbler. "Well, dear sir," he cries, "I do not much care for leaving it until the spring: but for a consideration and to oblige, I don't mind."

I will not trouble you with all the details connected with the buying of that little business: suffice it if I say the landlord was visited; an agreement made out and properly attested at Somerset House; a deposit left at the gas office; forty pounds paid to Jinks—twenty for the business and twenty for the furniture and show cases, that being all that I cared to buy, as I had apparatus of my own. "I'm so glad of that, ole man," cried Jinks, when he heard the latter proposal. "I shouldn't liked to have parted with my camera under fifteen quid, and I rather fancy it will prove useful when I goes abroad." Jinks, being a single man, did not stay in the place, so the two attics that we proposed to make our dwelling rooms were unfurnished, and accordingly another five or six pounds went to make them comfortable. Then came three days of hurry and bustle, cleaning out the place, and preparing the dark room, for I found the stock of chemicals there almost *nil*, and then, with little over two pounds in my pocket, I settled down to watch for customers. The excitement was over now, and, like the man who married in haste, I got time to repent at leisure. I had everything in going order by Wednesday morning, and on Saturday night I found that I had had only two sitters—two servant girls—one 5s. and the other 2s. 6d. That looked like a quiet business, did it not? "Never mind," quoth my wife, "it has not been very nice weather, and we'll likely do better next week." Next day being Sunday, I resolved to have a rest to enjoy my pipe, my newspaper, and my book; it never entered my head that such a nice little business in so quiet a locality, could be guilty of the enormity of Sunday work; but I was soon undeceived. About twelve o'clock there came such a knocking at the door that my wife thought the house was a-fire; but when I opened the door, there was Jinks wild with excitement. "My dear sir," he cried in agony, "what on earth is the meaning of this? Do you want to spoil the little business?"

I told him I had no such intention.

"Then why the devil have you not out the show cases?"

"Sunday!"

"Sunday be blowed!" was his irreverent answer. "You will sometimes do more on a Sunday here than you will all the week, so out with them, my boy!"

So out they went, and sure, as he said, before dinner time I had taken over a pound. But, great heavens! was this the nice quiet business—was this the Arcadian joys that I had promised myself on the Sundays? Away, delusive dreams! my eyes are open, and I gaze on sad realities. Six days in the week shalt thou labour, and on the seventh do all thy work. Such was the jocular way Jinks put it. There are some jokes that I can never see the point or fun of them, and that is one. We were both very much depressed that Sunday evening, and, a word in your ear: I do not think our religious principles were so much hurt as that we felt a sort of social falling off—a sinking in the scale—a lowness that seemed to equalize us with the touters of Pentonville and Euston Road. I need not tell the reader that during the course of the first week I discovered that to make a living in the place I had to put my shoulder to the wheel. I might have exclaimed, in the words of the noble Baron Bilkilarsky, "Hit's no use tawkin'; summat must be done."

Portrait clubs were beginning to be common then, and I conceived a notion that I could manage a pretty fair thing out of them. I advertised in the *Chronicle* for agents—energetic agents. For three days my door was crowded by all the imbecile loafers in Clerkenwell and Islington. You may think I exaggerate, but, by my halidome, it was perfectly amazing the crowds of ragged lazaroni that applied for that situation of mine. The landlord of the publichouse at the corner offered to make it worth my while to keep on inserting it—he was evidently experiencing the saying of an ill wind blowing no one good.

I got four clubs started. The best one was conducted by a young man in the Aldersgate Post Office. A drawback that these clubs had were that they all wanted to be taken on a Sunday. Jinks was not wrong: it proved my busiest day. So things looked a little better for a bit. But one black, gloomy day my police rate was handed in to me, and as I counted the money I had I discovered that we were eating up all that we were making—that, in short, if we could sit without taxes or rent we would be making a bare living. This was disheartening. "Summat" else must be done.

I hit upon another idea that at first promised to tide me over all my little and accumulating difficulties. I went round the different schools, and solicited the honour of photographing the scholars in groups. I met with wonderful success, and we passed our Christmas with hopeful hearts. But it was only a lull in the storm that was bound to swamp our little craft. Had I had a friend, or had I had another fifty pounds in the bank when I took that business, I have not the slightest hesitation in saying that I would have made it pay. But it was the want of ballast that upset us when the gale came.

I shall give you the sequel of the nice quiet business in Chapter X.

[The Editor will be obliged to "An Operator" if he will forward promised information regarding retouching varnish, as there are several applicants waiting for it.]

(To be continued.)

THE PRESS AND THE EXHIBITION.

[From THE GRAPHIC.]

This exhibition is rapidly developing into one of the most interesting London "Annals," not only owing to the numerous fresh processes by which photographs are yearly made more perfect, but to the pains which photographers themselves are taking to elevate their art, and transform the stiff, hard-set face of the ordinary portrait into a thoroughly artistic, unaffected, albeit correct, likeness. That they have succeeded we are far from saying, but we may point to the various portraits by A. Boucher, to those of Lady Gilford by Lombardi, to some admirable studies from life, such as the "Little Flower Girl," by W. Gillard, to the charming portraits of children by W. J. Byrne and W. E. Debenham, to the autotype prints of the young Princesses of Wales by Robert Faulkner, and to several very fine specimens from H. S. Mendelssohn, and from

the inimitable "Mora" of New York, as some of the best examples of their kind that we have seen. Nor should we omit the enlarged portraits of Wilkie Collins and Charles Reade by the Woodbury Company and A. Lombardi respectively. The various instantaneous processes afford great facilities for taking sea views, and two little gems taken on instantaneous gelatine plates by Joseph Gale, "Brixham Trawlers," are particularly noticeable. Other seascapes are some really magnificent studies of the "Dogs of Scilly and their Prey," by Colonel Stuart Wortley. Mr. Vernon Heath is to the fore with his large landscape photographs, those of "Burnham Beeches" being particularly good. His "Stoke Pogis Church," enlarged by the Autotype Company, is the largest in the room. Some very good views of Tiutern Abbey are shown by the School of Military Engineering, of North Devon scenery by William Bedford, of Scotland by James Valentine and Sons, of Ireland by Payne Jennings, while foreign scenery is best represented by a very good view of the Villa Clara Bayona by E. Hyol. In animal subjects T. J. Dixon undeniably carries off the palm with his fresh and hold "Studies of Lion and Lioness," while in floral subjects Mrs. S. G. Payne exhibits some particularly pleasing photographs, as also a very well arranged group of "Fish and Moorhens." There are numerous attempts at photograph-pictures, amongst which we may especially particularise a most realistic "Fern Seller," by H. Garrett Cocking, an exceedingly pretty interior, "Between the Lights," by H. P. Robinson, and a "Child Artist"—an exceedingly ugly little girl, by the way—by the Autotype Company, from a negative by A. Sachs. Space will not allow us to do more than mention the various portraits taken by the luxograph and the electric light processes, the photographs on porcelain by the Autotype Company, which strike us as capable of still further improvement, the various subjects printed in platinotype by W. Willis, Jun., the highly interesting photographs of the Dutch (Willem Barents) Arctic Expedition of 1878, and the curious unique photograph of the mirage seen over the steeple of Tenby Church last May, when the launch of a gun-boat at Pembroke Dockyard, some twelve miles distant, was clearly portrayed in the sky. Altogether, the exhibition is well worth a visit, but we would draw the attention of some of the exhibitors to the utter incongruity of their frames. Surely a heavy gilt surrounding does not harmonize with a simple little landscape.

[From TRUTH.]

PHOTOGRAPHY, to my thinking, has become a perfect nuisance, and I was going to say the same thing of photographers; for, in the way of artistic prigs, perhaps there is none so to be shunned as these gents. of the camera, who look upon all mankind, and nature into the bargain, with such a glassy eye to business. More sensitive than their own plates in their artistic feelings, they are desperately anxious to be thought artists in the fullest sense; and I see that the Council of the Photographic Society have assumed all the little airs and graces of the Royal Academy. They advertise themselves with Her Majesty the Queen and H.R.H. the Prince of Wales as patrons, and they drop the word "photograph" entirely; everything is a picture. But let any painter or man of taste look in at the Society's exhibition, and see whether that is the way to portray nature. The art of worthy old Madame Tussaud is quite as good and twice as natural, and in the Baker Street Gallery you are not obliged to go into the chamber of horrors. I don't mean to say that photography is not a useful and an amusing thing in its proper place—in copying maps, engravings, drawings, and giving exact likenesses of people and places; but, when it is attempted to assume for it the merits of art, photographers make themselves ridiculous. Unfortunately, most people, and many professed artists, not knowing what art is, are captivated by the photograph, and so the thing has proved much more of a curse than a blessing so far as art is concerned. It has done more than anything to debase popular taste, to destroy the modern school of painting, and to wipe out the poetic all over the world.

[From PUBLIC OPINION.]

THE improvement in photographic processes is well marked this year. The process known as the "gelatine" is, in our estimation, as yet unequalled, and this Exhibition by a young and certainly rising Society brings out great improvements. The scenery and trees exhibited by Mr. Payne Jennings are exceedingly good, and finely worked. Faulkner exhibits some wonderful specimens of the different expressions in the same children, analogous to

those which Rejlander showed during his lifetime. The gems of the Exhibition are the small frames, Nos. 244, 245, and 246, views taken on gelatine plates, developed four weeks after exposure, printed by Willis's platinum process by Dr. William Huggins. This new process gives an entirely new effect to the picture, and anything finer and more beautiful has never been shown in photography. Mr. Debenham's pictures (105 and 127) of portraits of children are worthy of notice. Messrs. W. Cobb and Son send some very good studies, printed in platinum, for gelatine negatives (338 and 339), and there are very few "amateurish" pictures exhibited. The Photographic Society seems to have gone in now for steady practical work, and to have entirely passed what has been called the "orthomorphic" stage of its existence. We are always pleased when a science is fighting its way to the front like that of photography, though we are in a difficulty when we try to subordinate its proper position in Comte's classification. And on the true answers to the questions, "Is photography an exact and a mathematical science?" and "Are its objects exact or concrete?" will depend its future position in the scale of applied sciences. The present Exhibition by the Photographic Society will tend much to the recognition by outsiders of the precise and exact character of the science, and the Exhibition is a most pleasing and instructive one.

[From the QUEEN.]

WHILST mechanical invention as a substitute for manual labour and mental activity may be regarded with considerable jealousy, there can be no question that the progress of such invention is making rapid strides. It is, however, quite possible that the substitution of the threshing machine for the flail, the grass-cutting machine for the scythe, and a hundred similar ingenious discoveries, may be the means of opening the question of a great and important social problem, hard to answer satisfactorily. In noting the development of the art of photography, whilst we hear of taking photographs upon gelatine direct, of photographing in colour, and of similar remarkable discoveries, yet no one, we should imagine, with any artistic knowledge, would say that the finest possible photographic portrait is at all equal to a first-rate miniature—the latter, unfortunately, an art now almost entirely superseded by the former. Certainly not the least interesting portion of last winter's exhibition of the Royal Academy was the collection of lovely miniatures, exhibiting as they did qualities necessitating high mental powers in their production, as well as great technical skill. In the present exhibition of the Photographic Society in Pall Mall East, the visitor will find that, whilst there is much to interest, there is but little illustration of those higher art qualities to which we have referred. The collection, nevertheless, is the best we remember to have seen, and, speaking generally, there is evident advance in the value of the landscapes, in the smaller portraits, and in the animal studies; but the enlarged life-sized heads are, as hitherto, a failure. Glancing very briefly at a few of the works illustrative of the different classes of subjects, Mr. Vernon Heath's "Buruham Beches," and "Stoke Pogis Church" (Nos. 7 and 8) are fine in tone; while the "School of Military Engineering, always strong in the periodical exhibitions here, has some singularly fine examples in views of Tintern Abbey and Chepstow Castle, (Nos. 18 and 19). Mrs. G. S. Payne shows no little artistic feeling in Nos. 22 and 29, "Designs for Easter;" and in No. 112, an enlargement by the Autotype Company from a negative by Vernon Heath, of "Stoke Pogis Church," we have one of the few perfectly successful examples of very large photographs in the Gallery. Probably this romantically-picturesque old church was never seen to better advantage—

Beneath those rugged elms, that yew tree's shade,
Where heaves the turf in many a mould'ring heap,
Each in his narrow cell for ever laid,
The rude forefathers of the hamlet sleep.

Having almost the effect of beautiful drawings in red chalk, are Robert Faulkner's autotype prints of the Princesses Maud, Victoria, and Louise of Wales will be sure to delight the spectator; and No. 114, "Dorothy Fletcher" and "Edward di Otrante," are equally excellent. Passing on, the visitor should note A. Boucher's half-a-dozen portraits direct from life (No. 137); and in Nos. 197 to 204 Colonel Stuart Wortley's valuable studies of clouds and sky effects. "The Fern Seller" (gelatine plate), by H. Garret Cocking, is a well-studied figure of a woman with a child in her arms and basket of ferns at her back, whilst the wall against which she stands is placarded with playbills and advertisements of various entertainments. Another worthy figure picture is by W. Gillard, "The Little Washerwoman," a

small profile whole-length of a child with bare feet, standing at a wash tub. Among the animal studies we noticed an untouched carbon enlargement (No. 111), "Lion and Lionesses," by T. J. Dixon. Here, indeed, we see the lion in the natural terrible grandeur of the kingly brute. Another fine picture of animals (No. 161), an elephant, zebra, and two others, is by F. York; whilst a third, scarcely so important, is No. 324, "Horses, &c.," by S. G. Payne. Upon the screens are a series of most interesting works in "Inhabitants of Armenia" and "Incidents of the War, 1877-78," taken by Nikitin, Tiflis, exhibited by Leon Warnerke, and a number of views in India, by A. T. W. Penn. On the table, among many interesting and valuable examples of the art, are two gelatine negatives (Nos. 421 and 422) by Alexander Cowan and Samuel Fry.

[From the PRINTING TIMES AND LITHOGRAPHER.]

THE exhibition shows a marked advance in productions of artistic merit. In addition to the improvement which is always inseparable from an increased acquaintance with the beautiful as exhibited in the works of our painters and sculptors, we think something may be due to the use of the rapid gelatine processes that have, during the past twelvemonth, been forced upon the attention of photographers. Portraits and landscapes can now be taken in about one-tenth of the time formerly required by the collodion process, the consequence of which is that expressions in portraiture and effects in landscape are easily caught now which formerly escaped during a comparatively long exposure. The professional photographer can now purchase ready-prepared plates of exquisite sensitiveness, so that his mind can be directed more to the art phase of his work than to the regulation and manipulation of chemicals, while in outdoor work, moving figures, animals, clouds, waves, and shipping, are photographed with a rapidity truly marvellous. The present exhibition will well repay a visit from all interested in the advance of photography.

[From the ILLUSTRATED LONDON NEWS.]

VARIOUS causes have been unfavourable to the exhibition of the Photographic Society. Most potent among these causes has been the extraordinary dullness of the sky for many months, in consequence of which some only of the leading contributors of former years have been able to prepare works for exhibition at the last moment. We are told that part of the planet Jupiter is obscured at this moment by a remarkable red spot; but the astronomers of Jupiter must have discovered that an equally singular spot, varying in hue from a dirty brown to a dull leaden colour, has hung over the earth for a long time past, hiding from view that portion of the pigmy planet where England is unfortunately situated. Another reason why some of the customary exhibitors are absent, or not in force, probably is that many photographers are not yet familiar with the more rapid gelatine process lately introduced. When you can justly object to a photographer that he has exposed his plate some seconds too much or too little, you may fairly expect him to do better next time; but when you tell him that his exposure has been too long or too short by a quarter of a second he may not unreasonably urge the difficulty of appreciating such fractional atoms of time. The value, however, of the increased celerity of these new methods for seizing a transient expression or gesture—for everything that has life or movement—can scarcely be over-estimated. But we had already seen what may be done by the "instantaneous process" properly so-called. And, again, Colonel Stuart Wortley astonishes the visitor, and affords delight to the marine painter, in his series of coast scenes in Scilly and elsewhere, wherein the passing clouds in splendid compositions of various aerial strata, the march and welter of twinkling waves, and breakers dashing themselves among rocks, and even the flying scud, are caught and fixed for ever. In other studies from the Scotch firths and coast (28), by Messrs. Valentine, there are effects of reflections on the sea which might scarcely be credited in a picture. A small photograph by A. Donald, called "The Trout's Retreat" (145), with an added sky, is also strikingly expressive of wind in the sway of the foliage and the drift of the luminous clouds. The value of the rapid process, by means of a small negative, enlarged in the printing, for rendering animals, is also well shown by T. J. Dixon, among others, in studies (at the head of the room), of a grand old lion and lioness—though the enlargements are obviously "touched up." The necessity, again, of a process, instantaneous or nearly so, for "taking" children, is no less obvious—for are they not restless little animals? Stimulated,

probably, by the success of Mr. Faulkner, several contributors have sent frames of photographs of children only - notably Messrs. W. E. Debenham (105 and 127), W. J. Bryne (90 and 91), and E. Greaves (237), in which frames some of the little darlings are quite sculptural in their beauty. The children by Mr. Debenham are especially charming in pose and grouping, and as photographs they are technically perfect. Yet Mr. Faulkner is scarcely rivalled on the larger scale of his vignette heads called "Studies of Expression" (114), and the children of the Prince of Wales (113), which, reproduced by the Autotype process, resemble drawings in red chalk. *Apropos* of the autotype the Company exhibit specimens of its excellent process, including some examples of the success lately attained in reproducing monochrome studies by artists or pictures through the medium of a monochrome drawing prepared by the artist himself—see, for instance, "Studies from Nature," by R. Elmore, R.A. (340). There seems, however, something left to desire in the rather rough and not pleasantly-toned enamel photographs by the Company at the end of the room—i.e., photographs burnt-in on porcelain and earthenware. This application of photography may, nevertheless, prove acceptable for decorative purposes to manufacturers, if not to the more artistically-educated portion of the public. We need hardly say that the bulk of the exhibition consists of landscape work—prominent among it being the productions of Messrs. Bedford, Heath, the Woodbury Co., the Chatham School of Military Engineering, and others scarcely, if at all, inferior. The names of the contributors we have mentioned is sufficient guarantee of the high manipulative excellence of their exhibits, and it would be supererogatory to attempt to criticise this department in detail had we space to do so. The autotype enlargement of "Stoke Pogis Church" (112), from a negative by Vernon Heath, is a *tour de force* as regards size, if a little hard—perhaps inevitably so from the nature of the subject. By its side is an equally large magnificent piece of woodland scenery, "Pain's Hill, Cobham," enlarged by the admirable process of the Woodbury Company, from a negative by Captain G. H. Verney, which is remarkable for the breadth and true value of its gradations, combined with clearness. The School of Engineers at Chatham maintains its reputation in a series of beautiful views of "Tintern Abbey," &c. (14 to 20). The merit of these views appears more extraordinary when we consider that they are produced in the leisure of the Corps of Engineers, not by professionals. They reflect great credit on the teacher of the school, Lieutenant L. Darwin (son of the philosopher), the hon. sec. of this Society. Among other works in this class deserving particular notice are W. J. Grant's views taken during the Dutch Arctic Expedition, 1878, F. G. Norton's views in Demerara, and a series of scenes in Armenia, by Nikitin, a Russian photographer. We would also mention four or five tender little landscapes (245 to 247), by W. Huggins, taken on gelatine plates, developed four weeks after exposure, and printed by Willis' platinum process. To be able by this means to take a view and develop long after would evidently often be a great advantage in travel. Mr. W. Willis, jun., exhibits many samples of the process of printing we have just named (the platinotype), invented by him—a chemical novelty whereby some disadvantages of the process of gold, and still more of silver, printing are obviated. The objections to platinum printing at present are that the tone is cold, and the shadows a little opaque or smoky. Returning to the figure-works, there are, of course, many exhibitors of portraits and studies besides those already named. As noteworthy for some novelty of aim we may mention the frames of studies taken on dry plates (295), by H. L. Mendelssohn, which evince much artistic feeling in arrangement and lighting; the so-called "Panel Portraits" (292), by H. Rocher; "Portraits direct from Life" (137), and others by A. Lombardi; by the Woodbury Company, from negatives by Lock and Whitfield; a study of a reaper in sunlight (147), by G. Bruce; portraits by H. Vanderweyde, taken by electric light (which renders the photographer independent of the fickle sunlight in this climate), soft, yet effective, but a little theatrical in pose; and others taken by the Luxograph light. But the portraits are generally touched up with the pencil, or "retouched," using the word the photographer borrows from the artist—as though the previous work had been done by hand! The difference of many of the portraits consists merely in the degree in which this retouching is concealed. The object is not simply to remove blemishes in the photograph itself, but to give an artificial smoothness to the flesh gradations. And we cannot too often repeat that precisely in the degrees that this falsifying, dishonest stippling is used (with a mistaken aim at flattery) so does the photograph lose its essential value and one great recommenda-

tion as a trustworthy record of scientific accuracy, so far as that is possible within its actinic, chemical, and optical limitations. It cannot be too strongly insisted upon that photography and art are two worlds which are absolutely and must eternally be distinct from each other in the very nature of things. For this reason we must still more strongly condemn what are called pictorial photographs, or "combination prints"—obtained by the piecing together of two or more negatives, taken necessarily under different and, therefore, incongruous lighting, with (generally) diverse degrees of exposure, and from various points of view. There are fewer examples of such artifices than usual here; but No. 232, "Between the Lights," by Mr. H. P. Robinson, will bear out our remarks. A little girl is seated by the fireside, and the object is to render the effect of firelight on her figure in opposition to the daylight that enters the window; but an artist will instantly feel that the true effect of firelight is not rendered, and that it has not a just relation to the light of similar intensity at the window. Moreover, the photograph is obviously retouched.

A PHOTOGRAPHIC ACTION.

At the Metropolitan County Court, Bloomsbury, on Friday last, the case of *McAndrews v. Furrer* was heard before Mr. Judge Bacon, in which the plaintiff, a photographer, sued the defendant, John Furrer, trading as the Cornhill Photographic Company, to recover the sum of £50 for an alleged breach of contract under the following circumstances. Mr. Fitzgerald appearing as counsel for the defendant, and Mr. Vernell, barrister, for the plaintiff. From Mr. Vernell's opening it appeared that the plaintiff had entered into an agreement with the defendant under the form of an irresponsible partnership for three years terminable at one at the option of either party; the defendant employing his client at a nominal salary of six pounds weekly, with a participation in the profits, to manage the business at 59 and 60, Cornhill. The plaintiff was a photographer of twenty years' experience. On the 19th of April of the present year the agreement was entered into, and as the concern was only in its infancy the plaintiff only received three guineas a week instead of the six, when, after he had been only six weeks in the defendant's employment, he was summarily dismissed on the 6th June on the ground that he was incapable of carrying on the business through habits of intoxication, and that when he applied to the defendant for the money due to him, and for the fulfilment of his contract, he was refused: hence the present action. The plaintiff being called, corroborated his counsel's opening, but in cross-examination admitted having brought spirits into the studio, but was never the worse for liquor, or asleep when on duty. He had a black eye on two occasions, but that was the result of accident. He was not intoxicated when he photographed the defendant's wife, although he had to take six negatives before he succeeded in doing so. In re-examination, he said that since he left the defendant he had had an excellent certificate from Mr. Zorloni, of Scarborough, that he was a good poser, a good chemist, and most attentive to sitters. This being the plaintiff's case, it was urged on the part of the defence that the plaintiff was incapable of managing the business on account of his continual drinking habits. John Furrer called, said he was defendant in the present action, and he dismissed the plaintiff on the 6th of June, as he always appeared sleepy and listless, and certain he was an established drinker and could not properly attend to sitters. Mr. Clement, in the defendant's employment, said he had seen the plaintiff intoxicated, and on two occasions with a black eye. The defendant's traveller gave corroborative evidence, who, in reply to the learned judge, said he had written to the defendant, informing him of the plaintiff's state. The evidence of the defendant's wife went to show that when she called at the studio the plaintiff was too shaky to take her portrait. After two other witnesses had been called in support of the defendant's case, the learned judge, in giving judgment, said that the agreement before him decidedly took the form of a partnership in which the plaintiff was to share the profits, which appeared to him to be *bona fide*. The partnership had no right to be annulled except on good grounds, and he considered the plaintiff was not entitled to have this agreement cancelled. Still it was a question as to what amount of damage the plaintiff had sustained, and it appeared to him that as the plaintiff had received six weeks' pay from the defendant, who worked the business at a loss, he was only entitled to nominal damages. Judgment was accordingly entered for the plaintiff for one penny damages, with taxed costs on the higher scale.

The Photographic News.

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THE INDICTMENT AGAINST PHOTOGRAPHERS.

IN the late action for libel it was not Mr. Adolphus Rosenberg alone who was on his trial: photography and photographers were also practically indicted, and if a certain portion of the press were the authoritative tribunal it would have gone hard with the alleged criminals. Oddly enough—or, perhaps, not odd, because it is common—it is in the journals which live by gossip, which trenches, as everybody knows, close on scandal, that the greatest virulence in imputation against photographers is found, justifying Tennyson's line that

"They that most impute a crime are pronest to it."

Vanity Fair charges that photographers seem to regard themselves as chartered libertines in multiplying copies of the portraits they have been employed to take. After making the statement, the writer fortunately proceeds to the illustration, or proof, which is ridiculously inconsequent. He narrates a case in which a photographer did not multiply copies, but, having taken a lady's portrait, he subsequently finished a copy on porcelain, not for publication or miscellaneous sale, but to submit to the lady for purchase if she liked it. As her husband did not care to make the purchase, he wished the photographer to efface the portrait, "which," as the narrator adds, "was done." What more would he have? The custom is, we believe, by no means uncommon amongst enterprising photographers, when they have obtained a fine negative which seems to especially lend itself to special style of finished picture, to produce a completed portrait in such style for the purpose of submitting to the sitter for purchase. In many cases the customer regards this as a compliment, and gladly purchases the portrait which is so satisfactory. The photographer referred to by *Vanity Fair*, it appears, found, as a rule, that his sitters thanked him for giving them the chance of seeing such portraits of themselves without incurring expense, and, in the majority of cases, purchased the picture. We have, it is true, heard such a mode of doing business condemned as undignified in the photographer; but we have never before heard the whisper of a suggestion that it was any injury to the sitter, who incurs neither trouble nor risk in the matter.

The fact that the photographer destroyed his work and effaced the portrait brings us to another point. However confused and illegal the ideas of the various commentators on the subject of copyright in photographs, they are, with few exceptions, at one as to the idea that photographers do publish the portraits of their sitters in defiance of their wishes. The public may be fairly held as justified in such an opinion. Mr. Cornwallis West stated by his counsel, and himself repeated on oath in the witness box, that he had been vainly endeavouring for twelve months to stop the issue of his wife's portraits. No one would like to be guilty of the rudeness of saying that this was untrue. But

everybody would, we think, be disposed to say that the statement wanted some explanation. We have repeatedly heard the remark, "Is it to be believed that the lady's portrait appears in constant variety of style and costume entirely in opposition to her wish?" And we have also heard it added, "Is it possible that the able portraitists who produce the charming portraits of these society beauties are so destitute not only of honourable feeling, but of common prudence, that they risk reputation and connection for the paltry profit on the sales, however extensive, of half-a-dozen individuals whose beauty and reputation for beauty must rapidly fade?"

We had the fortune recently to be present in an assembly which included some of the most able and distinguished portraitists in England, and this question came naturally upon the *tapis*. From one after another of the most distinguished portraitists came the indignant denial of the imputation. And from one after another came the expressed conviction of assurance that no portraitist known to them would issue or publish a portrait of a sitter in defiance of expressed wishes. Further, that none of them ever had, or would, issue prints of a sitter without the consent of that sitter in writing. Some of them had taken portraits of some of the society beauties, and been requested by the sitters to publish them; but none had ever parted with a print, or exhibited a print as a specimen, in opposition to the wishes of the subject of the portrait.

We believe that an honourable and honourably-conducted profession has been grossly misrepresented and calumniated. And we regret that no machinery exists whereby a federate and representative reply could be given, and protest made. No society, association, or combination of professional photographers exists, and no society in which trade interests can be considered or discussed. We have often suggested that the formation of a league or combination of photographers who might take united action when occasion occurred, would be beneficial to all professional photographers, and we repeat the suggestion now. The allegations so repeatedly made of late are calculated to leave an impression on the public mind to the effect that various dangers lurk in the photographer's studio, and that they are at the mercy of the photographer, who may sell copies of every portrait he takes if he can turn a penny by doing so. The world is, unfortunately, full of weakly and illogically timid people who will be deterred from entering the photographic studio under such an impression, thousands of whom might otherwise have been valuable customers. If an official round-robin, bearing the names of the most respectable portraitists, disabusing the public mind of such an impression, could have been published, the effect would have been most useful. It is not improbable that some portions at least of the press would have felt it just to publish such a document, and, at any rate, there would have been no difficulty in securing publicity by advertising.

COPYRIGHT IN PHOTOGRAPHS.

THE state of the law of copyright in photographs, and the probability that a new law will be passed next session, give especial force to our suggestion as to the importance of forming a league or guild of professional photographers, whose duty it would be to see that the interests of professional photographers are duly considered in the new Act. The painters have been well represented in committee, but, so far as we know, photography not at all; and the fact that, so far as we can see, photography has not been neglected, has been due to the right feeling of the committee rather than to the effort of any one representing the interests of photography. A letter from Mr. Bassano, in a recent issue of the *Times*, points out in the new Bill—abstract of which we recently published—what he conceives to be serious errors. Mr. Bassano is an eminent and skilful portraitist, and should be able to offer an

opinion of value on the subject. But we submit, with all respect, that his objections are not tenable, and the correction or alterations he suggests are not beneficial to photographers. First, the new Bill distinctly lays down the principle now generally held "that the copyright in a photograph shall belong to the proprietor of the negative." Mr. Bassano says that an experienced photographer will at once condemn this as being impossible in practice. Where the impossibility, or even difficulty, exists, we cannot see, whilst its justice and simplicity appear to us beyond question. He further says that the result would be that "a person possessing the photograph of a cherished—perhaps dead—friend would not be at liberty to have it copied without permission," &c. No; precisely not. That is just the aim of copyright; to prevent any one, friend or foe, from copying without permission. If the real or assumed friend might so copy, how shall he who is no friend be prevented? Mr. Bassano assumes many difficulties: for instance, the owner of the original negative and copyright might be a "hundred miles away." Is there no postal service? He "might be dead." There are generally representatives of his estate into whose hands his negatives have passed. Or he might be "jealously disinclined to give the required authority." Well, even the dog in the manger might be coaxed by a tempting morsel. Mr. Bassano next deals with a literal point, which, we think, he somewhat strains. Quoting a passage from the new Bill, which says that where a photograph has been made to order, and for a valuable consideration, the proprietor of the copyright shall not sell, &c., any copy of the photograph without consent of the person who commissioned it, &c., Mr. Bassano thinks this phraseology is not sufficiently clear or accurate. He would substitute the words "print from the negative" for "copy." Mr. Bassano alleges that a "copy of the photograph" is quite distinct from a "print from the negative." So, in one sense, the two are distinct, as a copy may mean a reproduction. But a "print from the negative" might not cover the ground so well as a "copy of the photograph." An enlargement, for instance, is not, and would not be understood as, a "print from the negative," whilst it is a copy of the photograph, and needs to be comprehended in the phrase in question.

Our object here is not to put Mr. Bassano in the wrong, but to illustrate a principle. The provisions of a new Act, which may so seriously affect the interests of photographers, needs the examination, consideration, and discussion of several competent persons. It is so easy for one person, being strongly impressed with one point, to overlook or misconceive other very important points, as we conceive in some respects is illustrated in Mr. Bassano's letter, an intelligent and valuable communication, emanating from one man who takes the trouble, amongst many silent ones, equally interested, to vindicate his profession. If professional photographers have sufficient enterprise and camaraderie to form a guild for self-protection, they may find that in the multitude of councillors there is wisdom, and such questions may be reasonably dealt with.

It is unnecessary to consider in detail the various wild suggestions and comments on photographic copyright which have been made—possibly the wildest, that of his Lordship, given from the Bench, to the effect that it would be necessary for a sitter to purchase the negative of his portrait to secure immunity from publication. The really efficient method is to sit only to respectable portraitists, whose promise that they will not issue copies may be trusted. The only fear then of publication would arise from the class against whom the judge's remedy would be powerless—we mean the unscrupulous photographers who make copies of prints without troubling themselves about the negatives. But who shall escape every peril in life? Whoever becomes celebrated, whether it be for beauty, ability, or crime, must be photographed; and if they decline absolutely to risk the perils of photography, they

risk others they dream not of. The bishop who refused to sit was scarcely adequately or satisfactorily represented by the criminal "with forehead villainous low," whose portrait was scattered broadcast on the strength of a similarity of name. But this was not done by a respectable photographer.

FRENCH CORRESPONDENCE.

EXPERIMENTS WITH VAN MONCKHOVEN'S STUDIO PHOTOMETER—ACTION OF LIGHT ON GELATINE RENDERED INSOLUBLE BY IRON PERCHLORIDE.

Experiments with Van Monckhoven's Photometer.—In accordance with the promise which I gave to my esteemed readers, I feel it my duty to make them acquainted with the results of my experiments with, and investigations into the principle of, the instrument which my learned friend, Dr. Van Monckhoven, proposed to use as a photometer for the studio. As I stated at first, Van Monckhoven has not been at the pains of setting any definite form for this apparatus; he has merely indicated what is the action of light on uranium oxalate, and has given a simple method of verifying that action. No doubt all the experimenters who have wished to verify the statements of Van Monckhoven have first of all set to work in the way which he indicates. This has been my own case; but I was soon led to the observation that the instrument, to act as a correct photometer, must be constructed in quite a different way to that described by the inventor. A close examination of the working of the apparatus—that is to say, of a flask of about 250 cub. centim. capacity, into the neck of which, by means of a caoutchouc stopper, is fitted a tube—has at once disclosed the fact that the action of the light, in reducing the uranium oxalate, continues a long time after the rays of light that fell on the vessel have been cut off. Several hours afterwards, and in complete darkness, disengagement of the gas is maintained, and the index, formed by a small column of the liquid which is isolated in the tube, continues to rise. This forms a serious obstacle to the employment of the instrument during a short period of time, and for several successive observations, when that instrument consists of one vessel only. But the defect might be remedied by setting upon a stand ten or a dozen flasks or bulbs of glass of a smaller capacity—100 cub. centim. would be quite sufficient. Each of these bulbs should be furnished with a neck, to which should be fitted a tube, curved in such a way as to lie in a horizontal position, and these ten or twelve tubes should then be fastened to a graduated panel, the zero point being so arranged as to be as close as possible to the vessel. An index of mercury is brought at each observation to the zero point by means of a moveable wind pipe, and a number of independent opaque shades, each of which is made to cover one of the bulbs, will afford the means of exposing at the time of observation any one of the bulbs to the light, while the others are kept in the dark. Evidently this is a much more complicated apparatus than the one indicated by Dr. Van Monckhoven. The point, however, is to utilize the principle, and consequently to adapt the construction of the instrument so as to maintain the truth of that principle, and not to arrange it for merely one of its phases. My honoured fellow-worker, Dr. Vogel, has pointed out another defect, though I have not yet had an opportunity of corroborating his opinion. This appears to be due to the formation of a large number of crystals in the interior of the flask in consequence of any lowering of the temperature. On account of this phenomenon, he says, a less concentrated solution of the uranium salt must be used in winter when the temperature is low, and hence the sensitiveness of the apparatus will be lessened. This proves the truth of what I affirmed at the outset, that it would be necessary to take account of the temperature and also of the degree of concentration of the solution; also that it would be requisite to discover a simple formula connecting

the temperature with a fixed standard of concentration, so as to lead to a knowledge of the comparative action of light in the unit of time. Now our friend Van Monckhoven, who is nothing if he is not a practical man, knows all this as well as I do, but, at the same time, he is perfectly aware that the greater number of photographers are hardly sufficiently versed in the delicacy of chemical manipulation to be able to use an instrument of this kind with the proper accuracy. Nevertheless, they ought to be practically acquainted with all the details of their profession, and we must therefore avoid placing in their hands an apparatus which they are unable to use correctly. The photometer, therefore, in its present form, is in this respect defective, and it remains for us who are by profession investigators to study the question closely, to look at it from every side, until we have invented an instrument which, acting on the same principle, shall give us a correct measure of the intensity of light. My learned colleague, M. Poitevin, has also indicated numerous applications of the principle of the action of light on bichromatized gelatine, but he himself has not been in a position to carry out these applications so as to make them of value to the practical photographer; in the hands of specialists, however, they have produced results of the greatest importance. In the same way will it be with the photometer—the nascent photometer of Van Monckhoven—it will be improved and transformed until it is able to render great services to photography, but it will always have the name of Van Monckhoven attached to it.

A Printing Process by Means of Insoluble Gelatine afterwards Rendered Soluble by the Action of Light.—Since I have had occasion to mention the name—a name never to be forgotten—of Poitevin, I should like to say a word on that gentleman's special process depending on the action of light on a layer of gelatine made insoluble by the following solution:—

Water	...	...	100 cub. cents.
Iron perchloride	...	...	3 grammes
Tartaric acid	...	...	1 gramme

Gelatine, with which this solution is incorporated, is insoluble, but ceases to be so in those parts where light is able to act, by reducing to its natural state the iron compound. I have not myself been able to make experiments on the very interesting reaction here indicated; but as it has been published by a man whose assertion on such a point it would be impossible to doubt, I can at once see very important results that follow from it. I can foresee here a means of producing carbon papers for special purposes; these could be sensitized from the very first, for all that is requisite is to have insoluble pellicles of pigmented gelatine, stored in a dry and dark place, where they could be kept for a long time without deteriorating. With this inverse method of working—I call it "inverse" because the action of light produces an effect quite opposite to that which it has when the gelatine has been sensitized by bichromate—we ought to be able to arrive at results of quite an opposite kind to those of the ordinary processes. Adopting this method in the Woodburytype process, as pointed out by M. Boivin, we might leave the film of gelatine in contact with the glass plate over which it had been flowed, and expose this upper surface against the negative. The gelatine, which is at first insoluble, would become soluble to a depth corresponding to the greater or less transparency of the negative. Opposite a very transparent part a depression would be formed much deeper than in a place opposite a comparatively opaque part. The transparency produced would be positive; a moulding taken from it would be negative, and this, in its turn, would give the ordinary metallic plate of the Woodburytype. With a positive transparency a print could be taken serviceable for the first moulding. When applied to special kinds of carbon printing, or for the reproduction of line drawings, the layer of gelatine must be very thin, and not highly

coloured, and then the following action takes place: if it be exposed beneath a positive—for instance, a pen and ink drawing on thin paper—the light acts through all the translucent parts, but not on the parts beneath the lines. When sufficiently printed, it is only necessary to place it in hot water, and the lines alone will remain visible; the whole of the ground, which has been acted on by the light through the white paper, has become soluble, and has been washed away by the hot water. Hence we have the means of obtaining as a direct positive the reproduction of a drawing in black lines on a white ground. This application of the process appears to me to be of great importance, and to have a successful future in prospect. I believe, moreover, that in this country it will soon be worked on a larger and commercial scale. The experiments that it is my intention to make will, I hope, have practical results, which may be of great service to those endeavouring to work out such applications, and I shall be glad, so soon as I have completed them, to lay those results frankly before my readers. I have already discovered another means of applying this action to the production of the negative copy of a line drawing on a sheet permeable only in the parts corresponding to the drawing, and rendering by pressure the exact reproduction of the original drawing. The conclusion to which we are led by the arguments of this letter is: all honour to those who lay down the great principles! The discovery of the practical applications to which those principles can be put is merely a question of time. All honour to such men as Van Monckhoven and Poitevin!

LEON VIDAL.

PRESS OPINIONS ON PHOTOGRAPHIC COPYRIGHT.

Mayfair comments as follows on what it terms Photographic Licence.

The question has become one of public interest; and Rosenberg is but one of a class of alleged libellers, and Mesdames West and Langtry but two of many ladies who, courting notability, have found that the gratification of this vanity has brought with it its own penalties and subjected them to coarse attack or unfounded and infamous suggestions. The husband of one of the ladies has, indeed, come forward and bewailed his position. He has seen what has been said for the last twelve months. It has been said in every form and way. There have been delicate hints. There have been plain statements. There has been sermonising. There has been satire. There has been scandal mixed with friendly advice, and coarse invectives accompanied by improper and unfounded insinuations. But all these have been but different forms in which public opinion has put the same fact—that it is not seemly that an English lady moving in private society and holding no official position whatsoever should put herself on a level with ballet-girls, actresses, and the favourites of the *demimonde*. The ladies who have done this, and the husbands who permit them to do so, cannot claim the excuse of ignorance or palliate themselves by saying that their present position is the result of a single false step. The bad practice has steadily gone on, and yet it provoked a storm of criticism from the very beginning. Soon after the portraits of these beauties were in the market, and were sold over the counter at tenpence a piece to every gallant attorney's clerk or gay young draper's assistant, the Press took the matter up and delicately gave a hint which it was hoped would be at once acted upon. The hint was not taken, and the photographic exhibition, on the contrary, became more numerous and more piquante. They soon ceased to be simple portraits. Every excuse was taken to present the beauty in a new attitude and a new costume. In one, her neck was seen to perfection, in another her arms, and in a third her position in a swing would exhibit a generous outline to the best advantage. Every day produced some new evidence that beauty was many-sided, and that photography was able to cope with all its attractions. Again the Press made itself heard. It spoke now in a doubtful voice. It took its place as a *Censor Morum*, and appealed to good taste and the reticence which had hitherto accompanied the blameless life of a modest English lady. The appeal was not responded to, and the mischief multiplied. The evil grew, and grew in two different directions. It affected the social position of ladies, and it injured the tone and character of the

English Press. It made vulgarity fashionable, and it made the abuse of vulgarity fashionable. The shop-windows were full of half-draped beauties, some professional and some private, amongst whom it is difficult to believe that a lady would allow herself to be placed, and the book-stalls were covered with pamphlets, newspapers, and reviews, in which it was distinctly said that indelicacy was coming into vogue, and that it was very difficult to distinguish between an English lady and a foreign harlot. In most cases such an assertion was grossly untrue, but in some it seemed as if it might be not without some foundation. Things, indeed, having gone so far, soon went further. The next step in this race for popularity was for ladies to make their appearance at trials where the question was whether modesty had been outraged and women seduced. Over and over again the judge from the Bench would give a hint, which was treated with the same indifference as the remarks of the Press of the photographs of the beauties. It soon became obvious that English women were beginning to have a taste for publicly displaying themselves in scenes where hitherto it had been thought they should not even be supposed to be present. Soon the courts of Westminster, when a divorce case came on, were as crowded as a morning performance at a theatre, and the windows of the photograph shops produced a new series of novelties. Hitherto the tenpenny beauties of fashionable life had been married ladies, and in many cases ladies of the aristocracy; but now an advance was made. Young girls in private life were done 'in cabinet form,' and exposed for view with Christian and surname printed under, at two shillings a portrait, or when the portraits got soiled, tossed, or out of fashion, at eighteenpence. It seemed, indeed, that a bad habit, based on the gratification of frivolous vanity, was to undermine the modesty which for centuries has been the pride and glory of English girls.

It is true there was an excuse. It was said that the advertised beauties could not help themselves. Photographs must be taken, and, once taken, what could the beauty do? It was not her fault that her good looks rendered her a saleable commodity. The photographer had the money benefit, and the general public got the advantage of cheap beauty. The answer was to a certain degree conclusive; though, indeed, it was obvious that some of the photographs were taken for the very purpose of giving the greatest gratification to the greatest numbers. Still the Beauty said that she could do nothing, and she not only said it but thought it, and all the world thought so too. It might, indeed, be well that ladies who attend the law-courts should know a little law, and that women who gain a reputation from their photographs should learn the conditions under which they are produced. Happily, the rules are very simple, and can be stated without the use of technical language. Any lady who gets her photograph taken, and who pays for it, owns the copyright in the negative. She has paid for it and it is hers. The photographer may keep the plate, but he keeps it for her benefit and not for his own, or at least only for his benefit in so far as he will be paid for the copies she may subsequently order. And he must not sell a single copy without her leave. If he does so her (or her husband) may proceed against him before a magistrate and recover a sum not exceeding £10 for every copy so sold. If, however, she is photographed for nothing, then the artist has the copyright, and may reward himself by selling the portraits to the public.

Mr. Thomas Fall, in the *Daily News*, says:—

SIR,—A quotation from the *Solicitor's Journal* was published in your yesterday's issue respecting the copyright in photographs. Though in the main correct as an interpretation of the Act of 1862, it is misleading to the public as regards their transactions with the portrait photographer, and I have no doubt you will allow me to state what is really the contract between the one and the other. The photographer engages to supply a certain number of portraits for his sitter at so much per dozen or so much each, and he produces the negative without any charge to his patron. The negative being merely his means for supplying the portrait, cannot be in any sense the property of anyone but himself, and in this particular I say the paragraph is misleading. The words of the Act are likewise very loose and ambiguous, so much so that I may say no photographer in London is in the habit of "executing photographs for or on behalf of any person for a good or valuable consideration," as it must be admitted that the charge for a dozen copies cannot possibly be said to constitute that "valuable consideration" which would include the ownership of the negative.

With regard to the question raised by the Copyright Commissioners' recent report—"the control over the multiplication of copies"—I may say that no respectable photographer ever permits portraits printed from his negatives to be issued to the public except at the request or by the permission of the sitter.

A letter in the *Daily News* says:—

Will you allow me to point out that your correspondent, Mr. Falls, has fallen into some confusion between the property in the negative and the property in the copyright of the photograph? The negative, of course, remains the property of the photographer, but under the Act of 1862 the person who is photographed, or more correctly speaking, enters into the contract, has the property in the copyright, and therefore he alone can authorise copies to be multiplied from the negative. I take it therefore that any photographer who should permit any person without such authority to obtain a copy of the photograph would be acting illegally and would render himself liable to a penalty. I only refer, of course, to the ordinary case, where there is "a good and valuable consideration" given for taking the photograph.—Your obedient servant, A BARRISTER.

Whenever the subject of photographic copyright is discussed in the public press, a letter is sure to appear signed by a Mr. Leighton, dating from the Royal Institution. This gentleman assuredly bears no good will to photography and photographers, as he styles it "a chemical result, often abortive." In what the result is "abortive" we do not profess to understand. How photography was favoured by Lord Westbury, or in what Mr. Foster changed his views, the following letter which appeared in the *Times*, does not show.

SIR,—The right to one's face" has been so often discussed in the *Times*, and the evils of the present state so fully exposed, that it is hoped the propositions embodied in the report before the House, at least as regards photographs, may become law. As a member of the Copyright Committee that sat for two years at the Society of Arts, under the presidency of Sir C. Eastlake, I must say that the artists were against such extensive powers being accorded to a chemical result (often abortive). At the Antwerp Congress of 1877, I used all my power to have the matter rectified, as I believe has been done in the Belgian law, and I see by the *compte rendu* of the Congrès International de la Propriété Artistique which I have just received from the Imprimerie Nationale that the subject has been met. The committee consisted of the first artists and jurists in France, where such an abuse could never have occurred, as it has here. With the Code Napoléon and a public prosecutor, such matters meet with prompt and summary condemnation. Our present state of the law was mainly due to the late amiable secretary of the Society of Arts, when photography was less practised than now. Mr. Le Neve Foster, being on the Council of the Photographic Society, felt bound to do all he could for it, and, having the drawing up of the report, prevailed upon Lord Westbury to favour photographers, though before his death I believe Mr. Foster had changed his views—at least as regards sun portraiture. Better have no legislation at all than give the right to one's face to any one save the sitter.—Yours ever,

Royal Institution, Oct. 28.

JOHN LEIGHTON.

In the following letter to the *Times*, a photographer naturally enquires why ladies sit so often in fresh costumes if they object to publication:—

SIR,—In your article of to-day on the *Town Talk* libel case, I think you were a little unfair in your remarks upon photographers selling publicly the photos. of our fashionable beauties, &c., without their consent. I think you must allow that ladies cannot much object to having their photos. exposed for sale when they go again, and in some cases several times, to the same photographer to be taken in another position, well knowing that he will offer, as he did on a former occasion, this new photo. for sale. I should say that most photographers would take this as a tacit consent on the part of their fair client to his offering the photo. for sale in shop windows, and I think with justice. This, I venture to say, to a great extent is what has made the photos. of our fashionable beauties so common, and evidently, if they desire it, the remedy is in their own hands.—Yours truly,

PHOTOGRAPHER.

October 28.

The Queen says:—

The recent trials for libels against two ladies have resulted in the conviction of the defendant, and his sentence to imprisonment for eighteen months. Convictions for libel are, however, matters of such ordinary occurrence, that this one has only excited special interest because the names of two ladies so well known in society have been by the trial brought before the public with a greater than usual prominence. From any ordinary trial of libel the public can learn but little; but from this trial the public has become definitely aware of an evil that has hitherto lurked unsuspected in the result of a visit to our photographer.

The fact that photographs of these ladies were sold in large numbers, and that they were exhibited in shop-windows to be gazed at by whatever crowd chose to assemble, was made the foundation upon which the libel was founded. Mr. Watkin Williams told the Court that his client was desirous of stopping the publication of the photographs of his wife, but that he found it was impossible for him to do so in the present state of the law. The other prosecutor probably also shared in this desire; and the impossibility of stopping the sale of the photographs of these ladies must have been very painful to their husbands. Few men, we should imagine, could enjoy the idea that the portraits of their wives, in various costumes and attitudes, were sold, or that any man who chose to spend a shilling or two could become possessed of their "counterfeit presentments."

It appears, however, that they have no remedy in the matter, and that as the law stands, anyone not purchasing the negative of his or her own photograph, and thereby acquiring the possession of its copyright, may be subjected to the same penalty of publicity. We have, indeed, heard, even in the privacy of quiet middle-class life—far removed from the "fierce light that heats upon" the leaders of fashion and society—that persons have been able by purchase to obtain copies of photographs of others in whom they were interested, even though they had not liked to ask for, or perhaps had been refused the gift of, a copy from the hands of the original. In this way, enthusiastic admirers secured the portraits of their favourite clergymen; grateful patients obtained the likeness of the physician or surgeon who had brought back the health of whose return they had despaired; admirers of particular statesmen enriched their albums with the "heads" of the objects of their admiration; and it has been whispered that, now and then, lovers possessed themselves by these means of representations of those who were dear to them. We have always thought that, in the cases of quite private persons, the use of this power of getting photographs was rather of the sort which is called "taking a mean advantage;" but, in the case of very well-known and public characters, we have generally regarded the matter in the light of a speculation indulged in by the photographers. Indeed, many persons whose public position makes it likely that strangers would choose to have their photographs, are importuned to "sit," and are presented with some copies of their cartes or their cabinet portraits, in order that they may consent to have their photographs sold as a "venture" by the photographers. It appears now, that if they once allow their portraits to be taken, they have no power to stop the multiplication and sale of them. When one recollects the hideous renderings of one's face that are sometimes produced as the result of photography, one shudders at the possibilities that have been thus laid open before many.

Fortunately for the majority of the sober citizens and dames who constantly trust themselves to the limning powers of the sun, the "expression" of the sitter is generally a matter of no moment whatever, except to himself or herself, or half a dozen or so of more or less partial friends. The photographer may register the sitter as "No —," and may inform all whom it concerns that copies are always to be had. But few indeed want copies, and, no doubt, after the lapse of a reasonable amount of time, the "negatives" are reduced to a non-existent condition, so far as the photographs are concerned.

But, every now and then, a man or woman becomes observed beyond the crowd, distinguished for something good, or notorious for something evil; and then comes the fortunate moment of the photographer who has been, as he considers, lucky enough to have been employed to reproduce the portrait of the "victim."

It certainly falls to the lot of but few, comparatively, to be among those whose photographs are desired by collectors. Fewer still care much whether their photographs are in demand or not. But it does seem hard that, if a person should desire

that his or her photograph should not be hawked about in the open market, he or she, in the present state of the law, should be unable to prevent this undesired publicity, except by the purchase of the negative of the portrait.

As it is now, it is well to remember that, if we desire to retain in our own control the publication of our photographs, we must make a bargain to that effect with our photographers, and must have clearly and legally conveyed to us all rights in the negative and photograph. Whether this consideration will have any deterrent effect upon the general public remains to be seen. But it is at least as well to bear in mind a peril of which most folks have hitherto been entirely unwitting.

Mr. Bassano writes to the *Times* as follows:—

SIR,—My apology for begging you to apportion sufficient space in the columns of the *Times* for the insertion of this letter is the importance, and, I may add, popularity, of the measure to which it refers, and the urgency arising from the near approach of the period when that measure may become law. That part of the proposed new Copyright Bill which refers to the copyright in photographs is, in my opinion, so ambiguous and, in particular, clause 34 shows such an imperfect knowledge of the subject, that I am afraid, with all deference to its compilers, that upon the first practical test being applied to it, its defects will become apparent, and reconstruction rendered inevitable. The clause commences with the words:—"The copyright in a photograph shall belong to the proprietor of the negative from which the photograph is printed." An experienced photographer will at once condemn this as being impossible in practice—its effect would be that a person possessing the photograph of a cherished, perhaps dead friend, would not be at liberty to have it copied, enlarged or diminished, without first having obtained the permission of the photographer who produced the original negative; and he, the photographer, might be dead, a hundred miles away, or jealously disinclined to give the required authority; it would be manifestly impossible to comply with this condition, and its immediate alteration would be rendered necessary.

The next, and as it appears to me fatal, error is, that the clause proceeds to deal with a "copy of the photograph" when it intends to legislate for a print from the negative. These are two distinct things, but the distinction is not established in the clause. By quoting this part I shall be able more clearly to show what I mean:—

"Where the photograph has been made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit any copy of the photograph without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any copy of the photograph, and, if the copyright is infringed, of taking proceedings in respect of the infringement, as if he were the proprietor of the copyright."

The words in italics are the fatal words which would render the clause wholly inoperative. The first word, "photograph," should be altered to "negative," and the words "copy of a photograph," in each subsequent instance, should be replaced by the words "print from the negative."

With these corrections the meaning of the clause would be perfectly intelligible, both to the photographer and to the public; whereas if it should pass into law in its present state, the former will find many loopholes whereby he may legally evade the penalties attached to it. For instance, if it remains uncorrected, he may argue that as he is the proprietor of the negative he may make whatever use he pleases of it, and that he cannot be prevented, because in no other part of the clause is his power annulled, the subsequent sentences simply referring to copies of the photograph, and not to prints from the negative.

Now, it may not have struck the compilers of this clause that copies of a photograph are not prints from the (original) negative. A person sits to a photographer and receives twelve photographs; one of these photographs he sends to another photographer, and requests him to make twelve copies from. In due course they are sent to him, and they are veritable "copies of a photograph;" but they are not prints from the original negative, and these latter, it is evident, are what the clause intends to deal with, although they are misnamed "copies of a photograph." I take it that it is thought desirable to prevent the multiplication of prints from the negative in the possession of the photographer who has made it unless he shall have previously obtained permission so to multiply them; but the clause

as it stands will not do this, as it simply prohibits the issue of "copies of the photograph." It appears to me, therefore, that the clause should be altered to the following effect:—

"The copyright in the negative shall be the property of the proprietor of the negative; the copyright in the photograph shall be the property of the person for whom it shall have been produced, but to be only available for private use, and not for the purpose of gain by publication. Where the negative has been made on the order of any person for a valuable consideration, the proprietor of the copyright shall not be entitled to sell, expose for sale, or exhibit any print from the negative without the consent of that person, and that person shall have the same right of preventing the selling, exposing for sale, or exhibition of any print from the negative; and if the copyright is infringed, of taking proceedings in respect to the infringement, as if he were the proprietor of the copyright."—I am, Sir, your obedient servant,
ALEXANDER BASSANO.

25, Old Bond Street, Nov. 3.

Correspondence.

THE FLYING SWALLOW.

SIR,—I venture to suggest that if Mr. Gale were to bring the swallow negative to the meeting of the Photographic Society on Nov. 11th, it would be an interesting exhibit, and decide the question.—Yours, &c., SCEPTICAL.

MEDALS AT THE EXHIBITION.

SIR,—Do you ever remember a photographic exhibition without numerous complaints respecting the medals and awards, the hanging, the time allowed as being too short to get them in, &c.?

The clique of exhibitors are like a lot of spoiled school-boys, who, having always taken the prizes, cry out because some one else has gone to the top of the class and they have only got honourable mention. Quite enough! They have monopolized the medals at all the exhibitions long enough, and methinks, perhaps, with the work of other peoples' brains, for, in many cases, the pictures have been the out-put of the employés of the establishments, and not the masters at all. I hail the awards with pleasure as showing that there is a likelihood of the blind patronage of the awards to the clique being at last broken through, and giving merit a proper recognition. No more gullery, black varnish, &c., or clouds added, that most likely were made by some one else, or breaking waves, said to be moonlight effects, when they were taken in a strong sunlight, &c.

I am not a disappointed exhibitor—never was, and never intend to be; I have something else to do. Neither am I an employé who considers he has been slighted by not having his work appreciated.—I am, sir, a hater of humbug, and yours truly,
JAMES SYRUS TULLEY.

PS.—Might I explain that in my last I referred to the eminent photographers not attending meetings to show the way they did their business? I did not mean their trading, I meant the way they made their negatives, and how they arrived at the magnificent results.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association was held on Thursday evening, the 30th ult., in the Lecture Room of the Free Library, William Brown Street, Mr. J. H. T. ELLERBECK, Vice-President, in the chair.

The minutes of the previous meeting were read and passed and Mr. Kenneth Bean was elected a member of the Association.

Mr. W. H. KIRKBY exhibited some negatives, with prints from them, to show the capital results he was getting from the gelatino-bromo plates which he prepared by Captain Abney's process described in the *British Journal of Photography* of 22nd May last. He (Mr. Kirkby) handed round two prints and their

corresponding negatives, the one being a Swan's plate and the other one of his own make. He had asked the Secretary to expose them simultaneously on a landscape; and the members could judge for themselves whether they would work a process which produced such good negatives and was so easily followed.

The Rev. H. J. PALMER said the negative made by Mr. Kirkby was, he thought, as near perfection as could be obtained. The plates were free from granularity, and without blemish of any kind, and of the two, he gave the preference to Mr. Kirkby's negative.

A discussion on the manner of preparing the plates was taken part in by Mr. Peter Mawdsley, Mr. Ellerbeck, Mr. Kirkby, and others.

Mr. G. BOOTHROYD exhibited Mr. Harrison's very ingenious rapid shutter, which has been previously exhibited and described in the *British Journal of Photography* by Mr. A. Brittlebank.

Mr. DAY exhibited a purchased gelatine plate covered with crystals, the negative being also full of pinholes. The crystals were evidently glass incorporated in the film, the plate having probably been laid face downwards on a glass-cutting table.

Dr. KENYON exhibited and explained the working of one of Rouch's patent 12 by 10 cameras.

A lantern exhibition closed the proceedings of the evening, the transparencies having been taken by Mr. Weber from the negatives of several of the members.

It was announced that the associated soiree of the literary, scientific, and art societies of Liverpool would be held in St. George's Hall, on Wednesday evening, 10th December. Members wishing to exhibit objects of photographic interest were requested to communicate with the Secretary.

The meeting was then adjourned to the 27th instant.

SHEFFIELD PHOTOGRAPHIC SOCIETY.

THE first monthly meeting of the above Society for the session 1879-1880 was held, by invitation of W. Dakin, Esq., the originator of the present Society, at his residence, Holly Bank, Nether Edge, on Tuesday evening, November 4th, when the members sat down to a sumptuous repast.

After tea, the chair was taken by Councillor THOMAS FIRTH, Esq., the esteemed President of the Society, and

A very interesting paper was read by Mr. DAKIN, on "The Choice and Use of Photographic Lenses," in which the writer advocated the use of lenses specially adapted to the work required of them, and disapproved of the endeavour to make one lens answer all purposes.

An instructive discussion followed. Various novelties in apparatus, &c., were exhibited; also a choice selection of stereo slides from gelatine dry-plate negatives, the work of one of the members, which were much admired.

The conversation then became general, and, with music, &c., an enjoyable evening was brought to a close.

J. TAYLOR, Hon. Sec.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The first meeting of this Society for the ensuing session will take place on Tuesday next, Nov. 11th, at the Gallery (Photographic Exhibition), 5, Pall Mall East, at 8 o'clock, when the medals will be presented, and a paper will be read by Mr. Leon Warnerke "On Photometers."

CHRISTMAS CARDS FOR PHOTOGRAPHERS.—Messrs. Reeves and Hoare have favoured us with some examples of grotesque pictorial cards illustrating photography for distribution for advertising purposes by photographers. The subjects are amusing, the designs good, and the work well done. We have no doubt that they will be found useful for distribution.

STEALING A PHOTOGRAPHIC EXHIBITION.—At the Thames Police Court, a few days ago, Francis Sales, a butcher, was charged on remand, before Mr. Lushington, with stealing a photographic exhibition, value £25, the property of William Johnson, living at 5, Sydney Street, Mile End, Old Town. It appeared that the prosecutor used to gain a living by exhibiting his show in the street. On Wednesday morning, the 12th of March, he had occasion to leave home on business, and when he returned at night he was surprised to find the prisoner, who was a lodger, gone, and also his show. About a week ago he met the prisoner

at Temple Mills, and gave him into custody. A previous conviction for felony was proved against the prisoner, and Mr. Lushington committed him for trial.

ZULU PHOTOGRAPHS.—The London Stereoscopic Company, of which Mr. Alderman Nottage and Mr. Kennard are the proprietors, have taken the preliminary steps in an action in the Supreme Court for slander against Sir Charles Whetham, the Lord Mayor, for expressions used in his magisterial capacity on the recent hearing at the Mansion-house of a summons against a shopkeeper in the City on a charge of selling and exhibiting indecent Zulu photographs. The Lord Mayor, through his solicitors, has accepted service of the process, with a view, according to his solicitors' explanation, of having "an opportunity of enlightening the public on the true facts of the case, and justifying the course he has taken."

THE TACTICS OF PHOTOGRAPHERS.—Photographers sometimes seem to regard themselves as chartered libertines in the matter of multiplying copies of the portraits they have been employed to take. In May last a lady had her portrait taken by a well-known firm of photographers, who were duly paid for their work. In August this firm sent to her a copy of this portrait on porcelain, mounted in red velvet, and which they declared to be "of more than average merit as a work of art." They added that if the lady should decide to purchase it, the price would be five guineas. The lady's husband, being fearful that it would be exhibited in the photograph shop, offered three guineas for it. This the photographers declined, and it was then pointed out to them that they ought not to have made such a copy of the portrait they had been paid to take, without having first consulted, and obtained the consent of, the lady's husband. To this they replied as follows: "We are sorry that you think us wrong in having finished such a picture without having first consulted you in the matter, but our experience is that unless people see what can be produced from their own photographs they do not give orders. We could show you dozens of letters thanking us for sending similar pictures for approval, and in many cases a second copy has been ordered." In this instance the lady's husband brought the matter to a close by requesting that the copy might be effaced, which was done; but it is to be presumed from their letter that so long as this firm finds that people "do not give orders" without seeing "what can be produced," so long will they go on making copies of the portraits they take without first obtaining the consent of the originals.—*Vanity Fair*.

USE OF PHOTOGRAPHY IN WOOD ENGRAVING.—In the practice of the ordinary method of wood-engraving, the artist whitens the surface of the block and makes his drawing thereon with India ink or pencil. The engraver then cuts upon the drawing, endeavouring to keep in mind the general effect of the original; but the latter is of course gradually obliterated as the work of cutting proceeds. To this obliteration of the original drawing is probably due a part of that loss of artistic effect in the finished engraving of which draughtsmen are apt to complain. The facilities offered by photography are now, however, being used by engravers and draughtsmen to assist in the production of better engravings. Instead of drawing directly upon the wood, the artist now makes his finished picture upon paper, which is then photographed upon the wood in exact facsimile; the engraver then proceeds to cut the photograph, and during the whole time of cutting he has before him the original paper drawing, to which he may refer for assistance in his endeavour to maintain and reproduce the spirit and feeling of the picture.—*Scientific American*.

To Correspondents.

THE YEAR OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future.

RETOUCHING VARNISH.—We have several applications for details of the retouching varnish mentioned in "Looking Back." To these we shall respond when the information reaches us. It will be necessary, however, for all applicants to send a stamped and addressed envelope.

JOHN WATKINS.—Aniline red of different kinds can be had of most chemists. Probably all the London photographic chemists would supply it. Failing this, Judson's dyes will answer very well for the purpose.

H.—We do not know whether the firm of Dollimore and Bullock now exists, or the whereabouts of any representative of the firm.

S. SENATO.—Your negative reached us in fragments from imperfect packing, hence we were unable to examine it. So far as we could judge by some of the fragments, the trouble from which you are suffering is known as matt silver stains or oyster-shell markings. These are chiefly due to the quality of the collodion, which is of a tough, horny, repellent nature. Ripeness from age is the only corrective to the collodion. It may be mended by adding a little old and powdery collodion. But so long as the collodion remains horny and repellent it will occasionally give such stains. Immersing the plate immediately the collodion is set, before it becomes in any degree dry, will help matters a little; or redipping the plate in a fresh 10-grain bath before development will help matters. Remember, please, that it is of no use whatever to transmit a negative through post unless it be packed in a moderately strong box, as it is sure to be broken. Yours, being placed between two slight pieces of board, were completely smashed.

S. PERRY.—To enable us to help you, an accurate reference should be given. There is no article on Development Printing on p. 24 of the YEAR-BOOK for 1878, hence we have no idea of the method to which you refer. Judging from your allusions that you tried to get an enlarged image on drawing-paper by the light of a paraffin lamp with ten minutes' exposure. So far as we can judge without further information as to your proceedings, there was no chance whatever of success. You might obtain an image on a collodion plate so, but not on sensitized paper. A collodion transfer may be so obtained. In printing by development on paper, after development the print should be thoroughly washed before fixing, otherwise the hyposulphite will be decomposed, and the elements of sulphur toning and subsequent fading produced.

J. JACKSON AND OTHERS.—We will forward the details of the Retouching Varnish mentioned in "Looking Back" as soon as we receive the information from our contributor.

H. COX.—Your letter with addressed envelope duly received, and shall have due attention. Regarding the missing stamp, about which you are "positive," we can simply tell you that it was not in the letter when it reached us.

ENLARGER.—There are various formulæ in which acetate of lead is added to the developer. Here is the one for developing paper prints about which you enquire, as being used in the Belgian War Office. Prepare stock solutions of—

A.—Acetate of lead	1 part
Water	100 parts
B.—Gallic acid	1 part
Alcohol	8 parts

To 4,000 parts of water 50 parts of solution A and 8 parts of solution B are added (if the weather is warm, or the prints have been over-exposed, a little acetic acid may be added with advantage), and the mixture is filtered into a large dish. The prints are immersed one by one, and constantly moved about, to ensure the even action of the solution. The detail gradually strengthens, and, after about a quarter of an hour, appears of a good black colour. They are then removed to a bath of hyposulphite of soda at 30 per cent., and remain in it with constant movement for ten minutes or a quarter of an hour, and are then well washed with several changes of water. No toning is necessary, but, if required, the prints can be toned in the ordinary way. The paper for such development is prepared as follows:—Thin Steinbach Saxo paper is salted by floating it for one minute on a solution composed of—

Chloride of ammonium	2 parts
Citrate of soda	2 "
Water	100 "

Sufficient citric acid should be added to make the solution just acid. The paper is then dried, and may be kept for use. To sensitize it, float for three minutes on a bath containing four or five per cent. of nitrate of silver rendered acid with citric acid. This operation and the drying must be performed in a perfectly non-actinic light, as the paper is very sensitive. The exposure under the negative varies from a few seconds to one or two minutes, according to circumstances.

JAMES MAYCOCK.—You will find advertisements in our business columns relating to businesses offered for sale almost every week.

ROBERT SYMONS.—Your photograph of the mirage is on view at the Exhibition, and will be noticed in the NEWS in due time.

EDWIN S. LAUDER.—You will find an article in a recent number giving full details. In the NEWS of September 12th, p. 435, a detailed article appears. Should you require further information, let us know.

Several correspondents in our next.

The Photographic News, November 14, 1879

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

EXHIBITIONS AND EXHIBITORS—GELATINE DEVELOPMENT AND A NEW PHOTOMETER.

Exhibitions and Exhibitors.—Mr. Tulley's letter, in which he compares grumbling exhibitors to spoiled school-boys, has a good deal of truth in it. "Do you ever remember," he says, "a photographic exhibition without numerous complaints respecting the medals and the awards, the hanging," and other matters? We frankly say that we do not, and having had some experience of hanging and exhibiting, judging, and medalling, we feel impressively the truth of Mr. Tulley's statement. Nevertheless, we should be sorry to have done with grumbings; all that is necessary in connection with such outcries is that they should be regarded as inherent to such things as an exhibition, and must not be rated above their proper worth. Our neighbours on the Continent are very fond of quoting the well-worn sayings about an Irishman being never at peace but when he is fighting, and an Englishman never contented but when he is grumbling; and perhaps if we were to hear these words in mind a little more, we should be less surprised at the demonstrations photographers make at the period of the Exhibition. In the course of our experience we have never met with a contented exhibitor; we might even say that we do not even know of a contented medallist. The hanging committee usually come in for most of the blame; the enraged exhibitor looks about for somebody to wreak his vengeance on, and these are naturally his victims. A fault, real or supposed, has been committed, and in the exhibitor's eyes somebody ought to be hanged. What more natural then than to choose those designated as the hanging committee? But worse than the enraged exhibitor is the injured exhibitor. The former tells you plainly what there is wrong—that you have only hung five out of six of his pictures on the line; he has it out, and has done with it. But the injured exhibitor is never frank with you. There is a canker worm at work about him somewhere, but you can't find out where. He has a catalogue of wrongs, and although members of council and executive officers come and go, his grievances go on for ever. The medallist, again, complains that although he has got a medal, he has not received it for a particular picture which he is quite sure is the best of its kind; and yet a brother photographer who has been awarded the medal for this latter branch of the art, has an exhibit of a decidedly inferior character! This is no exaggeration, but what came under our notice not five years ago. Two photographers, living in the same town, sent up, both of them, very charming work to the exhibition. They both received medals, but for pictures of a different class. The medals were of equal value, and one would have naturally thought the recipients would have been gratified. No so; the one who had the landscape medal wanted the one awarded to his brother for groups; but probably if the awards had been changed, there would have been just as much grumbling. It is well, we hold, that there should be a change made every year both in the hanging committee and the judges, and there cannot, of course, be any excuse for the non-fulfilment of rules on the part of officials. Whatever is promulgated as to the conditions of the Exhibition should be rigorously adhered to, or any alteration made known immediately. At the same time, it must be remembered that those who are entrusted with the duty of hanging or awarding are men of proved integrity, and have a very thankless task imposed upon them, a task which many refuse to perform under any conditions. Under these circumstances, it is somewhat puerile on the part of an exhibitor to cry out that, because of some arrangement or other that is distasteful to him, he will henceforth never contribute to an exhibition. It is very like telling a Member of Parliament with whose opinions you have held for some time, that because he has not pleased you in one particular

you will never vote for him again. Generally you may agree with him, but because on one occasion he runs counter to your prejudices, he is out of favour for ever more. Fortunately, the Photographic Exhibition does not depend upon the humour of any individual, and fortunately, too, the benefits that accrue to an exhibition, small as they may be, outweigh any inconveniences that accrue to him. Every year the Exhibition is becoming more popular. It has now been carried on successfully so long that it has become at last one of the features of the "little season" in London. The Press, all round, give notices as a matter of course, and have not to be "invited" again and again to do so. That the gathering might be conducted with still more spirit and become still more popular, we do not deny; but as it is, those who contribute to the collection never get so good an opportunity of displaying their work. To the professional photographer the result is that his name becomes more widely known; well-to-do visitors, both from town and country, look at his work and criticise it—visitors to whom otherwise he might never be known. Amateurs, on the other hand, have the satisfaction of seeing their work placed side by side with the best in the kingdom, and are thus enabled to judge very well of their skill and success. It is better than all the criticisms in the world to place your picture alongside that of masters in the art. There is then no need for some good-natured friend to point out your perfections or shortcomings, which become at once apparent.

Gelatine Development and a New Photometer.—Photographic Societies are about to resume their sittings for the season, and we sincerely hope that the session may prove an interesting one. There are many subjects that may be discussed with advantage during the forthcoming months, and one of them is the development of gelatine plates. Any photographer of experience who would detail his *modus operandi* whereby he watches and controls development will add much useful knowledge to what we already possess on the subject, and will be welcomed more heartily than usual by his brethren. Most of us have had some experience with gelatine plates, have prepared them, exposed them, developed them, and secured thoroughly good pictures by their aid. But with many, it is still as it was with carbon printing a little while ago. We had no difficulty in securing time after time successful results, but we could not quite ensure every result being perfect. So it is with gelatine plates. There is hardly a photographer who has not a good word to say for gelatine plates, or is not provided with them, and employs them occasionally. But the number who rely entirely upon gelatine work, and who for every score of gelatine films expended can show a score of good pictures, is not, we believe, very large. The difficulty in seeing the result while under development is one of the reasons for this, and if we could only get development well in hand, the greater part of the difficulty would be overcome. We see that Mr. Warnerke is going to tell us about a new photometer he has contrived, and we hope it will be a sensitive one, for we sadly want a measurer of light for our cameras. Photographers have no more idea than they had forty years ago. Daguerreotype was made known in 1839—about measuring the amount of light that enters the camera and impinges upon the sensitive plate. A good photometer would materially assist us in the development of gelatino-bromide plates.

Correspondence.

PHOTOGRAPHIC COPYRIGHT.

DEAR SIR,—I beg to acknowledge the honour you have done me by your notice of my letter to the *Times* newspaper upon the important question of photographic copyright. I conceive it even fortunate that you considered it worthy of editorial comment, because it is quite time the serious attention of the photographic world should be called to this, I may say, momentous subject, and I know of no

better means for the accomplishment of this than that it should be reviewed by the Editor of the PHOTOGRAPHIC NEWS. With respect to that letter, however, your judicial, but at the same time generous, criticism of it makes it only too potent to me how extremely difficult it is for one unaccustomed to public writing to express himself with the lucidity and conciseness essential for the conveyance to others of ideas which are, to his own mind, perfectly clear and unambiguous. If you will permit me, therefore, I shall be glad to have an opportunity to lay before your readers an explanation of some of those points which, it is evident, were not clearly demonstrated in the letter above referred to.

I endeavoured in the *Times* to point out what I considered the fatal errors of the now much discussed Clause 34 of the proposed new Copyright, which may become law during next Session of Parliament; but it is evident I did not succeed in making out my case. I believe it will be admitted that in an Act of Parliament relating to any profession the conditions, expressions, and meaning contained therein should be such as would be drawn up by a committee of experts—i.e., in this instance, experienced photographers—that there should be no ambiguity, neither should there be introduced into any of the Clauses words that might readily bear a different interpretation, to that which was intended; the terms should be clear and true, and such as would withstand the test of logical argument. But it is in these very essential qualities that I find Clause 34 wholly deficient. To prove this, in that part of it where it says, "When the *photograph* has been made to the order of any person for a valuable consideration," &c., I assert *photograph*, taking the context into consideration, is not the proper word to use; I maintain that negative is the only correct term to be introduced in this position, and for this reason. The Clause goes on to say that no copies of the photograph shall be issued without the consent of the sitter; whereas, in fact, it means that no prints from the negative of the sitter shall be issued without permission. So that, as the compilers did not mean copies (or reproductions) of a photograph, but in reality intended prints from the negative, the prohibition, in the first instance, should rest on the negative, and not on the photograph, and, therefore, negative should have been the word adopted.

For a moment, however, as an argument, let us say that photograph is the correct word: how would the subsequent prohibition to issue copies of it prevent the issue of prints from the negative? In no way that I can discover, because the photographer might say to the sitter, "I hand you the photograph for which you have paid me a valuable consideration, and I admit that I am by the Clause prohibited from issuing any copies of that photograph without your permission; but I must remind you that I have the original negative in my possession, and that I am nowhere in the Clause prevented from issuing as many prints from that negative as I please; the Clause simply states that I am not to issue any copies of that photograph which you hold in your hand, but is altogether silent in respect to the negative." Therefore I say "photograph" is an incorrect word to use in this position, and that it should be "negative."

I next take the expression "copy of a photograph," and say that this is also inaccurate. I think it will be admitted that the spirit and intention of the Clause is to prohibit the issue of photographic portraits painted from the negative of the sitter without the consent of that sitter. Now I beg to point out that a photograph is one thing and a negative another: the one is the paper positive resulting from the negative, whilst the other is the matrix or negative itself. Now one might just as well argue that the composed type and the book resulting from it are one and the same thing; if, therefore, you wish to prohibit the use of the type, why legislate upon the book? It is true you prevent the issue of imitations of the photograph (book),

but you leave the negative (type) unrestrictedly in the hands of the photographer.

Having, therefore, as I hope, proved that a copy from a photograph is not a print from the negative, and that it was the intention of the framers of the proposed Bill to legislate upon the latter and not the former, I think I may fairly say "copy of a photograph" is an inaccurate term to use in this position also.

There is one other question of such vital importance to our profession—the one raised by "Barrister" in his letter to the *Times*, November 8th, as to the ownership of the negative—that I will crave your indulgence for a short space more of your valuable columns to consider it.

I think I may safely say that I shall have the whole of the profession with me when I claim that the worker who has by his innate taste, cultivated experience, and perfected skill, created the negative, shall be the owner of the negative. But though we may as a body be convinced of the justice of the claim of a photographer to be the rightful "proprietor of the negative," yet we must not remain blind to the fact that we have powerful opponents to this opinion. To show this, I will quote that part of "Barrister's" letter which brings it forcibly before our eyes. He urges that an enactment should be passed whereby "every photograph, in the widest sense of the word, including negatives, positive, prints, and copies, shall be the property of the person who, directly or indirectly, orders or requires it to be made for a valuable consideration," &c. It is evident, therefore, from this, that others have opinions diametrically opposite to our own, and it behoves us to state and to stand by our claim if we do not wish it to be supposed that we acquiesce in the dictum enunciated in the above quotation.

Now, sir, though I am in accord with, I believe, the whole of the profession in claiming that the photographer should be the "proprietor of the negative," yet for my own part I would make him so only with limited powers: limited powers in this respect, that though he be the freeholder of the negative, yet that that freehold is only vouchsafed to him by law under the restriction that he shall not make use of the negative to the annoyance of the person whose portrait it is; that is, that he shall not print photographs from it without direct permission. This proposition may appear to be nothing more than is already established as a common custom of the profession, but it must be borne in mind that a new enactment may be repassed during the forthcoming session of Parliament, which will supersede all existing law upon the subject; and with the fact of such opposition as shadowed forth in "Barrister's" letter before us, it is possible that the right we claim may be wrested from our hands. It is therefore incumbent upon us that we should place before our law-makers those views and arguments which we consider ought to have a powerful influence in their determination as to the expediency of fresh legislation upon the law of Copyright in Photographs.

The next point in importance is whether the sitter, who has purchased the photographs, should have the entire and unrestricted copyright in those photographs. I am sorry to differ with you upon this question, but I maintain that he should so possess it, and that such an arrangement would be highly beneficial—and not as you suppose, Mr. Editor, injurious—to the profession at large. It is well known that a large proportion of a photographer's business is derived from enlargements and coloured pictures made from extraneous photographs. What then would be the consequence if the sitter were deprived of the copyright of a photograph which he has placed in the hands of a photographer (who is not the author of that photograph) for the purpose of enlargement, perhaps to the value of a hundred guineas? Why, the result would be that the sitter, from a variety of causes, failing to obtain the required permission, would be unable to commission the work to be executed, and the order would, to the loss of the photographer, necessarily have to be annulled. As a practical man of many years' experience, I can affirm that

this is by no means a strained illustration. To withhold, therefore, the copyright from our clients would, in my opinion, cause immense difficulty and irritation, and would saddle the public with a most irksome and unnecessary prohibition, resulting eventually to the serious injury of photographers in general. Free trade in this respect would act as beneficially to the one photographer as to the other, and by giving the copyright in photographs to the public—for their own private use only, of course—the whole body of the profession would be mutually benefitted.

To sum up, then, in a few words what I have attempted to advocate, I would—

1. Make the photographer, with restricted powers, the proprietor of the negative.
2. Give to the sitter the copyright in the photographs for all purposes but those of gain by publication.—I am, dear sir, yours faithfully,
ALEXANDER BASSANO.
25, Old Bond Street, Nov. 10.

DEAR SIR,—The views expressed in your leading article on this subject seem to me so entirely incorrect, that I must ask to be allowed to show where I think you are wrong.

In the days of the Daguerreotype and glass positives the sitter took away with him the thing to be paid for, and only in rare cases was an extra portrait left in the photographer's hands; and in those rare cases, what happened if any use was made of the portrait without the consent of the sitter? In some instances we heard of smashed show-cases, and appeals to a magistrate. In the first instance, it seems to me that the only reason why it became a rule for the negative to remain in the custody of the photographer was on account of its liability to injury. The sitter was entitled to the possession of the negative just in the same way as he is to his name-plate, for which he has paid the engraver, and for the cards that have been printed from it. The case of the type-printer is different: we pay for impressions only, and if we want the type to be kept standing, we must pay an extra price.

The prevailing rule amongst photographers is, I think, a good one. He keeps the negative because he has convenience for doing so, and it answers his purpose in view of new orders. I do not, however, see why, in consequence of indifference, in the first instance, on the part of the sitters, he has been allowed to retain possession of the negative, he should now claim the copyright. I maintain that custom alone has given the photographer the privilege to retain the negative, and that the copyright in it belongs entirely to the sitter, who, if he choose to do so, may order any kind of copy or enlargement from it, and may do with it just as he please, and may have the prints copied in any form without consulting the photographer. I am speaking now with the experience of over twenty years; and I endorse every word of what Mr. Bassano says on the subject; namely, that if it became law that the photographer has the copyright, it will practically put a stop to business in copying and enlarging.

Most people are very hazy in their ideas as to when a photograph was taken. Let us suppose that the new law is prospective only. In the course of a few years a portrait will be presented to a photographer for enlargement, and his first question will be, "When was this taken?" Of course, there will be doubt as to whether it was before or after the passing of the Act. In numberless cases it will be found that the portrait was taken at some small seaside or country town, and the photographer may still be there, or he may not; yet it will be illegal to make the copy. But suppose the photographer and the negative to be still in existence: in how many cases would it be possible for our clients to get what they wish for (say, a five or a fifty guinea picture) at the little seaside place I have imagined? On the other hand, Mr. Bassano himself may be asked to copy one of my own portraits. By all means let him do it, or, better still, let him apply to me for a transparency. I claim no copyright, and he would please his client by producing just what is wanted.

Surely, Mr. Editor, I have said enough to show you that photographers have not a shadow of a claim to copyright in the prints from the negatives which they hold merely in trust for their clients! I have no objection to the custom of holding the negative being made legal, or that the photographer may destroy the negative if he choose to do so.

Most photographers know that their clients can seldom tell the difference between a copy and an original print, and when they do see a difference they do not know its cause. I am speaking of plain copies of about the same size as the original. There is a large amount of this sort of thing done for the sake of cheapness; and here, I think, a little law would be advisable. By all means let it be made illegal to mount such copies on cards with the name of the copyist; they should either be mounted on plain cards, or the word "copy" should be distinctly shown on the copy.

There is much to be said in favour of the photographer retaining possession of the negative: he should always have the right to print from his own negatives. I have seen the folly of allowing some amateurs to print for themselves.—Yours truly,
A. BROTHERS.

[Surely our correspondent must see that there is no force in his argument when he contradicts himself. How can the photographer have the right to print from his own negatives if the copyright belong to some one else?—ED.]

MR. GALE'S SWALLOW.

SIR,—In reply to my inquiry, we are again told by your contemporary, who is apparently angry at any reference to his connection with Liverpool, that "Mr. Gale's assurance has been given that there is no trickery" (your contemporary's word, not mine) in his picture with the swallow. This being so, it would be very interesting to photographers if Mr. Gale himself would confirm that assurance, which he has hitherto omitted to do, and at the same time, perhaps, he would enlighten us as to how he managed to make the swallow—a speck moving at certainly more than twenty miles an hour—the sharpest point in the picture! A glance will show that every other part of the photograph (which was not moving) is soft, although well defined, but the speck representing the bird is hard, sharp, and cut-out in effect. If Mr. Gale has really stated that his picture is genuine, he can of course have no objection to showing the negative; it would be of enormous interest, being the first bird picture ever stated by its author to be direct from nature. If he has not said it is genuine, he has an opportunity of correcting an erroneous statement. INQUIRER.

SOCIETY BEAUTIES.

SIR,—If the eminent firms of photographers who published the greatest numbers of the famous Photographic (so-called) Beauties had informed the Press and public generally what the large quantity of positions were taken for, it would, I imagine, place photographers in a much better light than they now seem to occupy. Unless the orders given by the ladies were very large, it did not pay to take so many for them only. If they were taken, as most people would naturally suppose, for publication, why object, or instruct their husbands to object, because an absurd article held them up to ridicule? They should have consulted their husbands' wishes first. OPERATOR.

THE PRESS AND COPYRIGHT.

WE extract from the *Lincoln Gazette* the following paragraph about Photographic Copyright and the Rosenberg trial. After the ignorant and puerile remarks of the London Press generally, it is refreshing to find a provincial paper able to present the case in a reasonable light.

The man with a grievance just now is the "poor photographer." He has been assailed right and left as a person without principle, who thought more of his own pocket than others' people's feelings, and who, against all remonstrance, insisted

on exhibiting and selling the portraits of the Beauties of the day. But he is not so black as he is painted. According to the latest legal lights there is no copyright in a photograph, and Lord Westbury's Act is so dubiously worded, in that fearfully lumbering style peculiar to parchment, that nobody can tell whether the picture belongs to the sitter or to the photographer, except, indeed, under special conditions, which are not carried out once in a million of times. The photographers themselves were in the dark as to their rights until Mr. Montagu Williams cleared up the matter. It now appears to be understood that if the photographer is paid for the picture the copyright rests with the purchaser. It is his by courtesy, if not by strict law. The photographer asserts that the negative is his property, but the image upon it can only be printed by order of the person who has paid. No respectable photographer would even show a specimen without permission, and far less publish copies for profit. But if a beautiful woman is invited to sit for her photograph, and consents to be taken in every kind of picturesque dress and dramatic attitude, it is an understood thing that she is willing that the picture should be public property. No private people, however lovely, are seen in shop windows, and it is only the Queens of Society who have thus figured and been classed with miscellaneous celebrities. It is understood that the Queen of these Queens, her Majesty, is much shocked at the publicity given to certain pretty faces of her Court, and that it is greatly in deference to her wishes that a stir has been made, and that the Langtreys and Wests have done their best to retire from the windows which, with their own consent, they once adorned.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER X.

HARD TIMES--A DINNER OFF GAS PIPES--THE USUAL ENDING OF THOSE QUIET LITTLE BUSINESSES.

THUS bad began, and worse remained behind. I was indefatigable in my exertions to make that miserable place pay. I never worked so hard in my life, and never was poorer. It was no use sitting down to wait for customers—waiting would not fetch the dinner; we had to catch the first before we could get the latter. I remember how concerned I was about my appetite during that awful period! I thought it enormous—I was always hungry. I used to feast off peaspudding and boiled beef bought cooked in the Essex Road like a healthy cannibal, and wash it down with four ale with a gusto that would have excited the envy of an alderman. That is one piece of knowledge that the quiet business taught me, viz., that poverty, although it makes a long face, requires but few stomach tonics, and that hunger is really the best and cheapest sauce in the market.

In spite of all [my clubs, my Sunday work, and all my efforts, things were gradually and imperceptibly getting worse. An MS. that I had sent to a paper for "perusal and approval," and on which I depended to keep me over quarter-day, miscarried—it was returned as unsuitable. The weather was foggy, wet, and dreary. People were offended when you solicited a sitting, and passed you over with the remark, "Wait until the weather gets finer!" Then, to cap all, the Doctor and the nurse had to be called in. There were fees to be paid, and I had another mouth, albeit a little one, to provide for out of this nice quiet business. Things were looking black indeed. I feel sure that some people would have gone out of their minds if they had been placed in the same position. However, thank God! I was never of a desponding turn of mind, and am possessed of the happy knack of making the most of whatever strait I've been placed in. It is comforting to know that you will not die of worry; and I am certain that will not be my final complaint, for if worry could possibly have done it, it would have finished me during the time I was owner of that "quiet business."

As sure as I managed to scrape twenty shillings together and placed them for safety in an old tin box, that we once had foolishly and fondly hoped to fill at least once a week, than there was an instant demand for it—

poor rate, water rate, police rate, or gas. There were sure some of them to be due. And here let me lift up my voice and anathematise that vile, vulgar, and loud-voiced gas collector! He was the only man whose tones ever struck terror to the soul of Geo'. He was a rugged-looking fellow, and I fancy took a dislike to me from the first, for he used to look at me in a manner that made me feel as if detected in the act of committing some enormous crime. It was no use speaking gently to him while informing him that you did not find it convenient to pay. His look doubled its meaning, and you felt that the condemned cell in Newgate was too good for you. Then, when he spoke, the sound of his voice would paralyse you, for though his words were few, they were full of meaning and matter. "Yer knows it's overdue, and when next I calls, it will be——" and he finishes this unromantic speech with pantomime; he screws up his face with a wicked leer, and turns an imaginary tap with the handle of his pen.

This was the way he served me during the first two quarters; but when the third fell due things were queerer than ever, and I found it impossible to meet his demand, only a mere matter of fifteen shillings. I was awfully miserable on the night previous to the fatal day when he was to appear, and put his pantomimic threats into execution. You must acknowledge that my case was very hard, especially, as I have said before, it was only for a few shillings, and the company held a deposit from me of two pounds. I am afraid I did not say my prayers that night when I went to bed, for I, who am never troubled with restlessness in the night, was visited by some most appalling visions. Amongst the rest I dreamt that I met that gas collector out on a dark rolling ocean; my heart leaped at the sight, for I knew that I was in an element where I was superior to an hundred such as he; my joy was demoniacal! I could see him glare in his terror, and clasp in desperation his accursed account book—his sole prop that kept him from sinking. The infernal pleasure I felt at that moment is indescribable! With a yell I dashed through the waves—I tore the book from his grasp, and—and then I awakened myself with my hysterical laughter.

I lay awake during the rest of the night thinking over all the troubles that this quiet business had brought upon me. I do not recollect what my thoughts actually were; I fancy that they were rather sour and bitter—in fact, anything but pleasant, so I will allow my readers to imagine them. One thing I resolved upon, as I arose next morning, and that was, that let fortune do her worst, she could only take from me the tables and chairs; she could make no demands upon my spirit or my honesty, and these I determined I should only surrender with my life.

Those early morning thoughts did me a power of good, for when a man sets himself to think earnestly, he, as a rule, will think right; and he who thinks right must, of a necessity, see the way that truth and honesty lie, and consequently imbibes courage to face the troubles that surround him. I saw clearly the mistake that I had made—I saw the inevitable end that some day must overtake us; but, like a bold (some might say foolhardy) captain, I stuck to my coffin ship as long as one plank held on another, and then had the melancholy satisfaction of sitting on my chest, weather beaten and forlorn, and exclaiming, "I have done my duty!"

Still, and in despite of those resolutions, I could not help but feel—and feel sorely—the truth of the old saying that "It's hard for an empty bag to stand upright."

However, I felt lighter of heart that morning after my little philosophical deductions than I had done for many a day previous, and when I thought of the impending visit of the gas collector, the vague, unhappy feeling was gone, and a burning wish to be revenged on him in a quiet sort of way took its place. By the time that breakfast was over I had formed my little plan, and as eagerly waited for his appearance as what I had dreaded it before. Would

you believe it?—he did not come that day. Just the way of the world. Had I been sitting there quaking and composing pathetic speeches, imploring him to delay the turning of it off for another week, he would have been there to the minute, and would have been as marble to my appeals. However, next day he came. I flew to meet him. A shade of disappointment crossed his sour visage as I came forward grinning; he evidently thought I was going to pay.

"Good morning! How are you? Been looking for you; I expected you yesterday!" I exclaimed in a hearty manner.

"Fifteen and nine!" he growled.

"Thank you, I know it! Now be quick about it."

"Quick about what?" he asked.

"Quick and turn it off," I answered, grinning.

I had fairly taken the wind out of his sails. I never saw a man look so silly in my life. He opened his mouth as if he would swallow me, and dropped his book with amazement. In picking up the latter, his hat tipped off, and in following it his ink got spilled all down his light pants. He then fell a-cursing.

I then addressed him in fatherly accents.

"Friend, I beseech you, do not blaspheme; there is a law against it, and, as sure as you fall to, I shall run you in. As a trustworthy servant of a respectable company, I am amazed to see you fooling about thus with your book and your hat. Remember that time flies! Do your work honestly by your employers, and turn off my gas."

He obeyed in silence, and then went to the opposite side of the street, and had a good stare. As I had paid for the fixtures, I now inspected the piping, the brackets, and gaselier, and, before dinner time, I had sold the lot for fourteen shillings. On the way home, after buying a couple of paraffin lamps to do in place of the gas, the delicious exhalations of rich frizzling sausages struck upon my olfactory organ. There was only cheese and bread at home! I couldn't resist the flesh pots, so in I went to steaming Egypt, and came forth laden with a mess that kept my mouth like a rain cloud until I got home.

"What have you got there?" asked my wife.

"Fried gas pipes," I answered, laconically.

We both burst into a hearty laugh, and sat down to as hearty a dinner as ever we sat in our lives, my better half remarking, quite sententiously, "Well, Geo', there is never any great loss, but what there is some small profit!"

In the morning I went and drew the balance of my gas deposit, and with the proceeds paid my poor-rate. But why follow up this tirade of struggles—why continue this dismal dirge? I was indeed like Poe's unfortunate raven's master—

"More unmerciful disaster

Followed fast, and followed faster."

What puzzles me now, on looking back at that awful struggle, is that I never thought of selling the things or having them removed, or doing some of the moonlight tricks that poor devils have resource to under similar circumstances. However, I didn't! I pawned my watch, I parted with my little bits of jewellery, but to have touched the furniture would have been desecration—so when the hoary-headed rascal of a landlord sent in the bailiffs, and left a dirty, greasy, lank-jawed, leer-faced man in possession, he got a good haul. I had not expected such harsh treatment from the land lord, but however, I learned afterwards that he was an unscrupulous blackguard. And, as a man of the world, let me speak this: had I sold the things and quietly departed, I must conscientiously say that it would have served the landlord right, for the villain knew perfectly, when I was on the purchasing of the business, that the place was rotten—that, in short, no mortal on earth could make a living in it! As an honest man it was his duty to let me know that Jinks was only too glad to get hold of me—that, in fact, it was as much in his pocket as in Jinks's, for he received three quarters arrears.

I blame the old landlord far more than I blame Jinks.

Jinks had been trieked, and naturally wished to get back part of his money, the same as a few tenants before him had done; but here was this old spider—this grasping elf—sitting quietly in the background aiding and abetting all these swindles, and, like another Fagin with his young prigs, licking in all the fat that their labours produced.

So now we had got to the length of our tether.

"I say, Geo'," quoth my wife, "here is the man in possession asking when we dine."

"All right, my dear, I shall go and tell him," I answered.

I found him sitting smoking a villainous smelling pipe in a back room where we did our toning and fixing. He was one of those peculiar people that you never see except on dreary occasions—people that you meet at deaths, prayer meetings, temperance halls, or other dismal and depressing places—people that you feel certain dwell in dungeons and cellars—people that bring toads and mildew and mould into your mind, and whom you term, in common parlance, wet blankets. There he sat blinking at me with his greedy, fishy eyes, and puffing at his charnel house pipe with all the complacency of a reptile who has dined.

"Friend," quoth I, in my most serious tones, "are you a vegetarian?"

He looked like as if he had lived upon slime.

"A wot?" he asked.

"Do you live upon vegetables?"

"They're very good along with a bit o' pork, Miste replied, as he snacked his lank jaws.

"Good," I answered; "you will have to supple yourself."

"Vot! Ere ye Jews?"

"Worse than that—we are Lucretia Borgians!" I replied solemnly. "We are bound to eat nothing but vegetables, and those we season highly with various poisons: thus we, this morning, breakfasted off a mess of pottage flavoured with arsenic; to dinner we have a rare broth whose principal ingredient is the sweet, yet deadly hemlock; for supper we shall have a savoury dish of toadstools fried with viridigris."

"Oh! the bleeding martyrs!" cried he. "What a devil's den have I got into? I only wonder you do not sup off fire and brimstone. I'll be a dead man before I'm four-and-twenty hours here."

"Shall I send you down some of the broth?"

"No, thank ye—no, thank ye! The devil a pick of anything I'll have in this house but what my 'ole woman brings me!"

And then that became the cheapest and quietest man in possession ever anyone saw. He would not accept of a glass of beer or a pipe full of tobacco from me. He used to hurry away to the back premises when he observed me approaching, and used to tell my wife, when he got the chance, that he would see my "statue done in wax work at Madame Tussaud's afore long," and then add, with a grin, "and in the chamber of horrors, too!"

Thus the week rolled on, and at last the furniture van came to the door, and away went everything but our boxes and our clothes. On the first appearance of the van I sent my wife out of the bustle, and when it was over, and the house completely gutted, I went and fastened the windows and doors securely, saw that there was no one left in the unlucky place, and came forth. The landlord was standing on the curb-stone. I locked the door and put the key in my pocket.

"What are you going to do with that key?" asked the landlord.

"I am going to keep it."

"But I have a tenant coming to look at the premises!"

"Good! Then if you wish this key you can have it for five pounds. I know the law, and I defy you to enter those premises for six months without my consent."

I bade him good morning, and walked off. Next day I accepted an offer of fifty shillings for the key, and thus ended my connection with the "quiet little business."

(To be continued)

The Photographic News.

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THE LATE LORD MAYOR AND INDECENT PHOTOGRAPHS.

THE recent escapade of a gentleman endowed for the moment with the dignity and power attaching to the office of chief magistrate of the City of London is one of those things which everybody would willingly allow to be forgotten, hidden under the universal contempt with which it is looked upon. The office of the Lord Mayor of London is associated in ancient times with many of the liberties of the people of England; and if it were nothing else in our day, it is the representative fountain and medium of all great acts of charity and benevolence in every case of public calamity. Hence no one can exult when the pettiness of one man, whose little authority was fortunately very brief, for a moment smirched the dignity of his office. We briefly refer to the matter because the occasion seized to gratify a little personal spleen was one which has left many anxieties on the minds of photographers, who begin to ask where safety is to be found. If the issuing of photographs of one class of Her Majesty's subjects—for as such the Zulus may now, we presume, be regarded—in their every-day costume be a legitimate subject of prosecution, is it safe to photograph the liberal charms of a British matron in evening dress? A rumour has gained some credence that this was but the first step of a general raid upon photographers, who were to be prosecuted for anything which could be construed as of questionable taste or decency. A well-known high-class photographer, who has gained considerable credit for the excellence of his photographs of statuary, recently received an anonymous letter, purporting to be a friendly hint, advising him to get rid of all his photographs of statuary taken at the recent Paris Exhibition, and anything of a similar nature in his possession. It is to be regretted that the late Lord Mayor's little plan of harassing some of his colleagues has been the occasion of a panic in some quarters.

From well-found rumours in the City it seems to be understood, however, that prosecuting photographers in the interests of decency was not the primary aim in the late case. It is understood that some of the civic authorities had personally made endeavours to repair the laches which the chief dignity's shabbiness had occasioned in regard to the credit and hospitality of the office. Those most prominent in endeavouring to save the dignity of the civic chair, of whom Mr. Alderman Nottage was one, earned the defaulter's bitter dislike, and this prosecution was one of the modes of indirect and unstraightforward annoyance. From a letter published by the solicitor for Mr. Phillpott, we learn that this was not a police prosecution at all. It was instituted by the Lord Mayor, conducted before the Lord Mayor, and decided by the Lord Mayor, who exacted a promise from the defendant that he would not sell any more of the cards just before he dismissed the summons, admitting thereby that there was no case for prosecution at all.

We think, then, that photographers may take heart of grace, and issue, in the regular prosecution of their business, whatever their own sense of decency justifies as having no prurient or indecent intention. It has been alleged that Mr. Alderman Nottage intended to follow up the late Mayor's illegalities until they met with their just punishment. If he fail in this it will not be, we apprehend, for lack of public spirit or enterprize, but rather from the contemptuous forbearance which will leave the delinquent to the obscurity into which he will naturally fall.

DEVELOPING GELATINE PLATES IN DAY-LIGHT.

THE one drawback—and beyond question a serious one—attendant upon the use of highly sensitive gelatine plates has been found in the fact that they could not be developed—or, in fact, uncovered for any purpose—in the ordinary dark room, illuminated with sufficient yellow light to permit of comfort in working. Extreme sensitiveness to feeble radiations has inevitably brought with it the risk of fog or abnormal action of light on the surface of the plate, if light possessing any actinic power whatever should come in contact therewith. The special claim of these plates is their sensitiveness to weak light, and that they are not wholly insensible to yellow light. Hence it should not be matter of surprise or impatience that they fog if opened or developed in the light of the ordinary dark room. To secure safety, it has been found necessary not only to reduce the area through which light could pass, but also to glaze that with deep ruby glass, two thicknesses being better and safer than one. With patience and practice it is not difficult to succeed with this small amount of light. But beginners often fail in the necessary precautions, and often, in consequence, blame the plates or the process altogether, and so fail to secure for themselves one of the greatest boons the art has ever placed within their power.

Mr. Werge has changed all this, and made development of the most sensitive plates easy in an ordinary sitting room, or, at any rate, in a well-lighted dark room. Amongst the many ingenious appliances exhibited at the recent South London Technical meeting, none excited greater interest than the developing tray of Mr. Werge, in which he developed in the full gas-light of the room a gelatine plate which had been exposed in the morning, and exhibited to the meeting the result in a clean transparency, without fog, or any trace of the abnormal action of light. The matter is, of course, very simple. The plate is developed in a covered tray, and is so protected from light. The arrangement consists of an ebonite tray, fitted in a casing of tin, grooved to allow a plate of ruby glass to slide in and cover the top of the dish or tray. There is also an aperture for a funnel, through which is poured the developing solution, &c. What arrangement exists for watching the progress of development we do not know, as we have had no opportunity of examining the apparatus. This and some other matters are doubtless provided for. We can here simply record the fact, interesting to many, that the demonstration before the South London meeting was a perfect success.

FRENCH CORRESPONDENCE.

PROCEEDINGS OF THE PHOTOGRAPHIC SOCIETY OF FRANCE.

THE opening meeting after the recess of the Photographic Society of France was well attended. Several papers—among them some of considerable interest—transmitted to the Society were first read, after which M. Davanne drew the attention of the meeting to the endeavours made by M. Peligot to arrange a series of public lectures on photography, to be delivered at the Sorbonne, and informed them that those endeavours had been attended with complete success. This course of lectures has received the

necessary official sanction, and will be delivered at half-past eight o'clock in the evening, on successive Tuesdays between the 2nd December and the 20th January next. M. Davanne, who will undertake the course, has already drawn up a complete syllabus, which was read at the meeting; and he stated that he intended to bring the whole within the limits of six lectures. The announcement of the proposed arrangements was received with acclamation.

With reference to the same subject, M. Leon Vidal also seized the opportunity of informing the meeting that he had been officially appointed Professor of a course of photography, consisting of twelve lessons, at the National School of Decorative Art at Paris. This course will be given every Sunday, and will be also open to the public. Since the funds for the expenses of this course are derived from a grant administered by the State, its organization may be considered to be an official recognition of photography as a subject of public instruction. It certainly was high time that France—the cradle of our popular art—should render to photography the professional status which it already occupies in other countries, and all who are really interested in its development and progress will entertain sincere wishes in favour of its success as a subject of public instruction. The scientific faculty of Paris, and the French Government, may have been tardy in doing their duty in this respect, but there is no doubt that the Professors who have been selected will do theirs by rendering their lectures as attractive and valuable as possible.

Among the new inventions and objects of interest exhibited at the meeting, it is right that I should specially draw attention to an exceedingly simple and useful portable stand for the camera, by M. Eugene Cheron. This stand consists of legs made of steel bars, which can be folded up or extended at pleasure, and fitting into a leather case, of sufficiently small dimensions to be carried in the pocket of the tourist. It forms a necessary complement of the travelling cameras, in rendering which portable so much ingenuity has been shown. Hitherto, the legs of these cameras, notwithstanding all the improvements they have undergone in other respects, have remained cumbersome and difficult of transport. Now this very serious objection has been overcome; henceforth photographers, when on their excursions, need only carry with them three small cases, which do not occupy more room than an opera glass, to have a firm and serviceable stand, capable of supporting a camera of any size, and without the least reason to fear the slightest oscillation. M. Cheron's ingenious apparatus weighs only from 750 to 800 grammes, measures 1.60 metres in length, and when folded into its smallest compass occupies a space of less than 8 cub. cents. We shall have in this apparatus a really valuable improvement, which only requires to be known to ensure a public success.

At the same meeting M. Ch. Petit exhibited a series of typographical prints obtained by means of photographic negatives from nature; M. Balaguy, a most enthusiastic amateur, showed some negatives on gelatine with prints taken from them as specimens, and gave a detailed explanation of his method of working with gelatino-bromide emulsions. M. Asser exhibited samples of photo-lithography. M. Poitevin gave a description of a new process for taking positive prints, depending on a reaction of the iron salts; and M. Pellet showed a graduated burette of his own invention for measuring a number of drops, as well as a new alcoholometer; and he also drew attention to certain improvements that he has introduced into his cyanofor paper.

M. Leon Vidal brought to the notice of the Society the experiments that he had made with Dr. Van Mouckhoven's new photometer. He more particularly pointed out the defects of the new instrument which present an obstacle to its successful introduction into practice in the photographic laboratory, and he demonstrated the possibility of effecting certain improvements. As at present

constructed the instrument can only be used for a single observation at a time.

Towards the close of the meeting M. Stebbing was anxious to submit to the Society a proposal which he had already made to the South London Photographic Society, for an interchange of photographs and photographic objects between this latter Society and the Photographic Society of France. Very properly, the chairman referred M. Stebbing to the Council of the Society, before whom he should have laid his project before bringing it to the notice of the meeting, according to the established rule. This seems to show that M. Stebbing had no authority for making to the South London Society a proposal of the kind indicated. It is to be hoped that this little rebuff may act as a lesson to the honourable member. He will do well, also, to remember in future the ordinary courtesies which are due to the Press, and when again referring to our journal to speak of it as the PHOTOGRAPHIC NEWS, and not slightly as "one of the English photographic papers." *A chacun son droit!* K. VERSNAEYEN.

PURIFYING AND SOFTENING WATER.*

A PROCESS for completely removing the hardness of water, and rendering it equal to distilled water in softness, has been recently patented by Mr. A. Ashby, of Grantham. The process is especially useful for manufacturing and industrial purposes, but may also be employed for removing the whole or part of the hardness from water used for drinking or domestic purposes. After the temporary hardness, which is due to the presence of bi-carbonates of lime and magnesia, and salts of iron, has been removed from the water by the addition of lime or lime water (Clark's process), by boiling, or by any other known method, the patentee adds, for the purpose of removing the permanent hardness which is due to the presence of soluble salts of lime, magnesia and iron, other than those which cause the temporary hardness, a sufficient quantity of a solution of carbonate or bicarbonate of soda or potash, or of any other soluble carbonate or bicarbonate which will decompose and effect the precipitation in an insoluble form of the substances which produce the permanent hardness, either with or without the aid of heat, which may be applied either by means of a fire, or passing steam through coils of pipe placed in the water to be softened, or by blowing steam directly into the latter. The waste or exhaust-steam from a steam engine may be employed as an economical source of heat. Or he removes the magnesia, which may wholly or partially cause the permanent hardness, by an addition of an excess of lime during the removal of the temporary hardness, whereby the water is rendered alkaline, and the magnesia is precipitated in an insoluble form, the excess of lime being subsequently removed by the addition of a sufficient quantity of carbonate, or bicarbonate of soda, or potash, or of any other soluble carbonate or bicarbonate, and when necessary by the addition of some free carbonic acid gas after the addition of the soluble carbonate, whereby any caustic alkali which may have been formed is converted into a carbonate. The patentee prefers to have a separate mixing tank, in which the solution of carbonate or bi-carbonate may be added after the lime water has been previously added to the hard water in another mixing tank, and to have the second mixing tank of larger dimensions than the first. Where there is steam or other power, stirring gear should be placed in each tank.

In the process described, the free and half combined carbonic acid gas is first removed, so that the subsequent removal of the permanent hardness is rendered both practicable and easy. The process may be used in conjunction with Clark's process, but it is preferred to use it in conjunction with the Porter-Clark process, which removes the temporary hardness from water. The patentee says that

* *English Mechanic.*

after water has been treated by this process, it is devoid of all hardness, so that it is equal to distilled water for washing and manufacturing purposes. When determining the proper proportion of soluble carbonate or bi-carbonate to be used, proceed as follows:—After a sufficient quantity of lime or lime water has been added to combine with the free and half-combined carbonic acid, or, if required, sufficient also to remove magnesia in an insoluble form, take (say) a quarter or half-litre of the water, and drop into it from a graduated glass measure (*e.g.*, a burette divided into cubic centimetres and parts of centimetres) some solution of soluble carbonate or bicarbonate of one per cent. strength, or of any other strength that may be found to be most convenient, and preferably some of the same solution that is going to be used in the process of softening, and then raise the water to as nearly as can be the same temperature as that to which it will be subjected during the process. In order to ascertain when just a sufficient quantity of the solution has been added, the patentee uses turmeric or red litmus paper, so as to avoid having an alkaline reaction in the water, or he adds a little solution of calcic chloride to some of the water after it has been filtered into a glass vessel, when no turbidity ought to be produced in the water; or some of the filtered water is added to a few drops of a solution of mercurous nitrate or of mercuric nitrate placed in a white basin, when no change of colour ought to take place; or any other convenient chemical reaction may be employed as an indicator. If a slight degree of alkalinity in the softened water is of no consequence, so much care need not be bestowed on this point. Should it be desired to remove only a portion of the permanent hardness, a smaller quantity of the solution of the carbonate than is indicated above may be added, and the resulting hardness of the partially softened water may then be ascertained by the standard solution of soap in ordinary use. Having now determined the relative proportions of the water which is to be softened, and of the solution of carbonate or bicarbonate which must be used in order to effect the desired amount of softening, the size of the orifices of the rectangular valves or openings through which either flows into the second mixing tank must be adjusted in the like proportions. For example, if 1,000 measures (say one litre) of the water required 10 measures (say 10 cubic centimetres) of the solution of carbonate, the two orifices must have the relative areas of 1,000 and 10. This adjustment is effected by having a slide plate fitting into one or both of the rectangular openings, which is moved by a screw, so as to increase or diminish the size of the openings. A graduated scale is placed either by the side of the graduated plate or on a circular plate at the end of the screw, which is used for turning it, or in both positions combined. In this manner the relative areas of the openings can be readily and accurately adjusted; but care must be taken that the fluid issuing from each opening has as nearly as possible the same head of pressure. A float can be arranged so as to cut off the orifices in equal proportions as the mixing tank becomes filled.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

The first meeting of the session of this Society was held in the Water Colour Gallery, Pall Mall, on the evening of Tuesday, November 11th, Mr. J. GLAISHER, F.R.S., in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were proposed and elected members of the Society:—Messrs. W. Gillard, E. S. Baker, W. S. Valentine, The Hon. Mrs. Holden Hambrough, Messrs. H. S. Mendelsohn, H. W. Barton, W. J. Byrne, W. Muller, Seymour Conway, A. King, G. Watmough Webster, T. Fokel, C. R. Southwell, C. King, A. Galloway, J. Thompson, E. Goole, C. Hussey.

The PRESIDENT then proceeded to distribute the medals

awarded by the jury for the best pictures in the Exhibition, adding a few complimentary and discriminative words as to the various qualities which had earned the medals. Those who were present to receive the medals in person were Mr. W. Bedford, Mrs. S. D. G. Payne, Mr. S. D. G. Payne, Mr. T. J. Dixon, Mr. Cowan, Col. Wortley, and Mr. W. Cobb. Medals were handed to the Secretary to be forwarded to Mr. Joseph Gale, Mr. R. Faulkner, Mr. A. Diston, Messrs. J. Russell and Sons, and Mr. H. Rocher, of Chicago. We subjoin a list of the medallists, with a statement of reasons for the awards.

Medals 1879.—Joseph Gale (4)—For artistic perfection—a most perfect picture. William Bedford (48)—For the pictorial excellence of his series of landscapes, but more particularly No. 48. Mrs. S. G. Payne (108)—For the artistic arrangement and photographic excellence. T. J. Dixon (111)—For the wonderful perfection in portraying a difficult subject. S. G. Payne (125 and 67 to 71)—For high general excellence. Robert Faulkner (113 and 114)—For high artistic excellence. Hills and Saunders (128)—For very perfect artistic treatment in portraiture. Col. H. Stuart Wortley (202)—For the perfection of his instantaneous pictures. James Russell and Sons (229)—For artistic combination. A. Diston (286)—For artistic excellence. W. Cobb (338 and 339)—For artistic ability in portraiture. H. Rocher (187)—For artistic arrangement and photographic excellence.

The PRESIDENT said that when the jurors had completed their work, having examined every picture exhibited, and examined their notes, they found they had noted a very large number as meritorious, a greater number than they could with propriety distinguish by medals. Going into a careful analysis, they found that there were twelve names in regard to the merit of which they were quite unanimous; it was resolved, therefore, that these should have medals. Then there were several more in relation to which they were nearly unanimous, and it was thought desirable to specially mention them with honour; not with any intention of giving a second-rate award of "honourable mention," but a mention with honour as possessing high merit worthy of recognition. These were Messrs. Vernon Hoath, B. King, Valentine and Sons, W. J. Grant, H. Dixon, A. Clout, C. Rosetti, H. P. Robinson, A. Fringle, Dr. Huggins, F.R.S., H. S. Mendelsohn, A. Fisk, W. Willis, Jun., F. G. Norton, Nitken, and Brandel. The Exhibition, he might add, had been a very satisfactory one. Already 3,571 persons had visited it, and as it was now resolved to keep it open until Saturday, it might be hoped the number would reach 4,000.

Mr. WARNERKE then proceeded to read a paper on Actinometers, but having read the introduction he said he thought the remainder would be better adjourned until the next meeting; in which he was confirmed by the President, who wished the meeting to resolve itself into an informal conversation, as being pleasant on such an occasion.

This was done, and the proceedings so terminated.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The annual technical meeting in connection with this Society was held on the evening of Thursday, November 6th, in the entire room of the Society of Arts, the Rev. F. F. STATHAM in the chair.

After a few preliminary remarks by the Chairman,

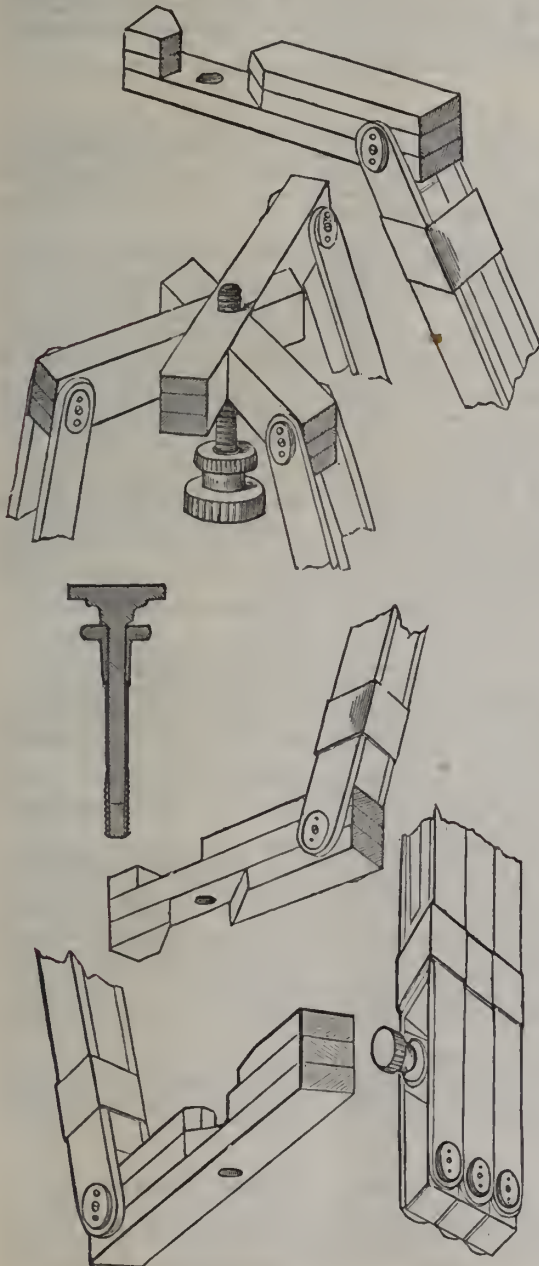
Mr. WARNERKE exhibited Mons. Vidal's portable camera, and described it as follows:—

This camera was shown by Mr. Vidal at one of the Photographic Society's meetings in Paris. In conformity with the wish expressed by our president, I went to Mr. Vidal during my recent visit to Paris, who, with extreme courtesy, lent me his apparatus with special view to show it to this meeting and give explanation of its working. The principal characteristic of this camera is that there is no ground glass to focus; focusing is done by means of a small telescope, permanently attached to the back of the camera in this telescope; it is the only centre of the image that can be seen, about $\frac{2}{3}$ of an inch in diameter. But in order to direct the camera so that the idea may be formed of the position of the object to be photographed on the plate, there is a segment in brass with divisions, and a rule with two projecting knobs revolving round a pin situated in the centre of the segment are fixed, one horizontally, another vertically. Knowing the angle embraced by the lens used, the rule properly placed will readily indicate the amount of the subject to be enclosed on the plate. Mr. Vidal, however, had, during his voyage, used also a ground glass when artistic consideration required it. The sensitive plates (twenty in number) are situated in the box on the top of the camera, and travelling by

means of a rack-and-pinion. Plates are put, by a very simple contrivance, in the camera, after it is focussed; and after the exposure it is transferred back to the plate-box, by obtaining the camera with the box; but this is done by a very ingenious arrangement, not requiring the negative to be taken from the stand. There happened that in the plate-box were some negatives taken by Mr. Vidal during his last voyage to Spain. I take the liberty to show you a few of these negatives, because they will testify better than my words the value of the apparatus, and especially the perfection of focussing.

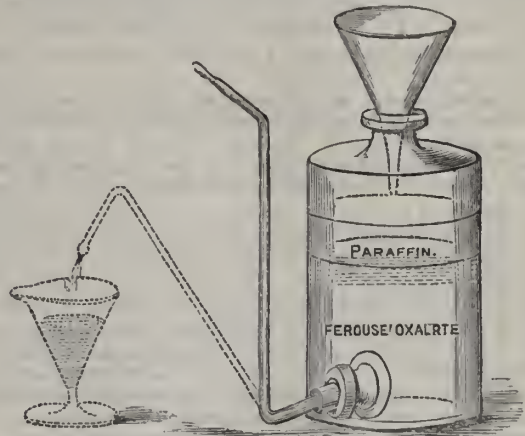
Mr. WARNERKE also exhibited an ingenious tripod stand with following top, and made the following remarks:—

A peculiar and quite novel fixture of this stand is its head, which is not a separate apparatus. Awkward generally in packing for travelling, but formed from three separate blocks of wood, hinged to the stand legs, and ingeniously jointed and screwed together, when the stand is to be made ready. The double screw of the original design fastens the head of the stand, and also fixes the camera to the stand. The enclosed diagrams will complete this description.



Mr. WARNERKE also exhibited a bottle for holding liquids which would be easily injured by contact with the atmosphere, and said:—

This bottle I constructed with a special view to keep ferrous oxalate developer for a long time. This developer, when kept in the ordinary manner, is soon decomposed by the action of air, which is readily detected by its action as developer, being after a time slower and slower, and ceases altogether, sides of the bottle being at the same time covered with insoluble iron oxide of a brown colour. Into my new bottle I put some paraffin, or any other liquid lighter than water insoluble in it, and not acting on developer. Paraffin will rise to the surface, and protect the developer from any contact with air. To draw the ferrous oxalate, when wanted, I have in the lower part of the bottle a glass tube fixed, which, when inclined, will enable me to draw any quantity of it. The bottle and developer I show was pre-



pared on the 16th of August, and it is just as active as when fresh. A portion of the developer that was used can be put back in the bottle if not preferred. Keep another similar bottle for second-hand developer, and to facilitate that I have a funnel inserted in the neck. Ordinary lamp paraffin is so little volatile that it can be kept almost open. One remark respecting the formula of oxalate developer:—

a.—Neutral oxalate of potash ...	...	...	100
Water... ..	...	...	250
Citric acid (when necessary) ...	...	...	10

to boiling solution (a.)

Oxalate of iron added ... ..	...	...	40
Water ... ..	...	...	750

If oxalate of potash is strictly neutral, the developer is immediately ready for use, and acts very clean; but I found that very often commercial oxalate of potash is alkaline. Developers prepared in that condition give foggy and flat images. Experiments often repeated demonstrate that also correction can be made with addition of potassium bromide, oxalate, tartaric, or citric acids, but this last is far better than others. It is remarkable, also, that no amount of that acid can destroy the developing power of ferrous oxalate.

Mr. WARNERKE also showed a dark slide by Jonto, of Paris, and said:—

While lightness and portability recommend this slide from the first immunity from the effect of damp, and double hinges to the shutter permitting to put it out of the wind, it will confirm good opinion in the course of working.

Mr. WARNERKE also showed a transparency which could be seen in the dark, being mounted on a plate prepared with a phosphorescent substance—sulphide of calcium.

Mr. HUGUES, who assisted in the demonstrations, called attention to a camera stand which had been sent for exhibition, very similar in its tripod head to that of the Professor from Moscow.

Mr. W. BROOKS demonstrated Mr. Willis's platinum process, developing several fine prints before the audience. He also exhibited an example of the application of the process to the production of photographs on textile fabrics.

Mr. BROOKS also exhibited Mr. Cadett's pneumatic shutter for use inside the camera. He also exhibited the various con-

venient movements, combined with steadiness and simplicity, of Emerson's head-rest.

Mr. ACKLAND exhibited a mode by which the common sliding rule could be made available to indicate the exposures required with lenses of different foci and apertures.

A demonstration of the working of the Luxograph apparatus was given by Mr. ARCHER CLARKE, and some examples of the work shown.

A heating apparatus, entitled Gillingham's Radiating Hot Dresser, was exhibited.

Mr. COWAN showed a plan of calculating exposures which he had devised. He showed a method of producing a portrait negative, with vignettes and border in the camera at one operation. He also showed several mechanical contrivances for facilitating work in the studio.

Mr. WERGE showed a drop shutter, in which the rapidity of the exposure could be regulated. He also showed a method of developing extra sensitive plates in an ordinary light (see a leader).

Improved shutters were shown by Mr. WARNERKE and Mr. B. J. EDWARDS.

Mr. BAYNHAM JONES showed a camera with a little contrivance to close the opening as soon as the shutter of the dark slide was withdrawn.

Mr. F. YORK showed some contrivances of Mr. Hatch for exhibiting slides of different sizes, each duly centred, in the magic lantern.

Mr. HENDERSON exhibited a burnisher which he had had in use for some years, which had several improvements not present in those commonly in use.

Mr. BOLTON showed the Wigham burner as used by Mr. Laws for obtaining portraits by gas-light.

Mr. W. M. AYRES exhibited a safety dipper for preventing plates slipping off in the bath. Also an ingenious holder to receive negatives of different sizes for use in the copying camera. Also a dark slide for holding plates of various sizes in any part of the slide. Also a waterproof dish made from a cardboard box coated with a varnish made by dissolving gutta-percha and pitch in camphine.

Mr. FOXLEE showed a specimen of carbon printing to illustrate the effect of moisture in the "continuing" action of light.

Another tripod camera was shown, in which each leg divided and expanded like a pair of scissors, the aim being to secure increased steadiness.

Mr. J. A. HARRISON showed an improved camera front.

Some examples of Dallastype were also handed round.

The annual dinner of the Society for the following Saturday was announced, as was also a meeting of the Photographic Club on the Friday (see in our next). After some conversation the proceedings terminated.

SOUTH LONDON DINNER.

THE annual dinner of the members of the South London Photographic Society was held at the Cafe Royal, Regent Street, on the evening of Saturday last, the Rev. F. F. STATHAM, M.A., in the chair.

After a pleasant dinner, the meeting devoted itself to conviviality, in the shape of toasts and songs. After drinking "The Queen," and singing the National Anthem, the Chairman proposed "The South London Society," which was acknowledged by Mr. H. G. Cocking, the Secretary. "Amateur and Scientific Photography" were proposed by Mr. Jabez Hughes, and acknowledged by Mr. Ackland. Mr. Mawdsley proposed "Professional Photography," which Mr. Foxlee responded for. Mr. Catehey proposed "Artistic Photography," and the response was by Mr. Payne Jennings. The Chairman proposed "Photography Abroad," which was acknowledged by Mr. Warnerke. The "Photographic Press" was proposed by Mr. Cocking, and acknowledged by Mr. Bolton. The Chairman proposed the "Vice-Chair," for which Mr. Hughes and Mr. Mawdsley responded, the former proposing the "Chair," which was duly acknowledged.

A print in platinotype of one of the groups taken at the President's house in summer was presented to Mr. Statham. Various songs and recitations by Messrs Bridge, Cobb, Heaviside, Jennings, Cocking, and the Chairman, added to the pleasures of the evening.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting was held at the Museum, Queen's Road, on Wednesday, 5th November, Lieutenant LYSAGHT in the chair.

The minutes having been confirmed,

The Hon. SECRETARY stated that notice had been given of the ballot for Mr. H. N. White, of Isle of Wight; and Mr. Walter Stephens, of Bristol. These gentlemen were then unanimously elected ordinary members.

Mr. H. A. H. DANIEL desired to remind the meeting that at the previous meeting it was decided that a large international photographic exhibition be held in Bristol in the end of 1880, presuming that the guarantee fund could be raised. He was very pleased to state that the fund had been raised, and, therefore, the whole question, which was a very important one, would occupy the attention of the meeting forthwith, in accordance with the agenda paper. The whole question was then gone into, and the date of opening, design of medals, number of classes for exhibitors, and other matters connected therewith fully discussed. Time, however, did not admit of the question being entirely decided, so that the meeting was adjourned till the following Monday at the Hon. Secretary's residence.

On Monday, the 9th instant, the adjourned meeting took place at the residence of the Secretary, St. Ann's Square, for discussion. After a large amount of most careful discussion and thought, the following arrangements were finally decided upon, and embodied in circular:—

Bristol and West of England Amateur Photographic Association International Exhibition. The Council of the above Association beg to announce that they intend to hold an Exhibition of photographs, photographic apparatus, and appliances in the galleries of the Academy of Arts, Queen's Road, Clifton, Bristol. To be opened on Friday, 17th December, 1880, continuing open till Friday, 15th January, 1881.

Apart from photographs for competition, the Council will esteem it a favour if those who have any interesting examples of the history and progress of photography will kindly lend them for exhibition.

The following is a list of the medals which will be awarded for the best and second best pictures in the various classes, and to be decided on the opinions of five gentlemen—being two eminent artists and three well-known photographers, three of the judges being outside the Association.

1. A Gold Medal for the picture or series of pictures which in the opinion of the judges possesses the highest degree of merit, irrespective of size or subject.
2. One Silver and one Bronze Medal for the best and second best landscape or series of landscapes of 8½ by 6½ or under.
3. One Silver and one Bronze Medal for the best and second best landscape or series of landscapes above 8½ by 6½.
4. One Silver and one Bronze Medal for the best and second best portraits or series of portraits of 8½ by 6½ or under.
5. One Silver and one Bronze Medal for the best and second best portrait or series of portraits above 8½ by 6½.
6. One Silver and one Bronze Medal for the best and second best genre picture.
7. One Silver Medal for the best enlargement of any subject, and by any process, provided it be the work of the exhibitor.
8. One Bronze Medal for the best transparency, or series of transparencies.
9. Four Bronze Medals to be awarded according to the discretion of the judges, for improved apparatus, materials, processes, or other meritorious productions.

All communications must be addressed to the Honorary Secretary, H. A. H. Daniel, Avonmead, Leigh Road, Clifton, Bristol.

Copies of Conditions and Application Forms for intending exhibitors will shortly be forwarded to recipients of this notice, and may also be obtained on application to the Honorary Secretary.

PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

On Friday evening last the Exhibition of the Photographic Society of Great Britain was open for the benefit of the Benevolent Association. With a charge of sixpence for admission

the attendance was very good, about two hundred persons being present, the fair sex being well represented. The Gallery was brilliantly lighted, and great interest in the display was manifested by the visitors, many of whom made a careful and critical survey of the pictures.

It may be mentioned that the Photographers' Benevolent Association was established to relieve any of its members, their wives, or children, who might have the misfortune to require assistance through sickness, death, or want of employment. A considerable amount of money has already been devoted to this object, and the Association contemplate forming an Invested Fund, in order to grant pensions to aged members, their widows, and orphans; but before that project can be realized, the Association must receive the support of photographers generally throughout the kingdom. If this assistance were received, the P.B.A. would become a flourishing institution; and it cannot be denied that the profession can well afford to have a charitable organization more worthy its widespread and increasing importance.

The offices are at 160A, Aldersgate Street, where the Secretary would be pleased to receive subscriptions or donations that any sympathizers may feel disposed to offer, and to enrol members.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

At the last meeting, with the President, Mr. H. J. Newton, in the chair, after the minutes of preceding meeting had been read and approved, the Secretary announced the death of the associate member of the Institute, Dr. J. V. C. Smith, who had long and satisfactorily filled the position of chairman of the Polytechnic Section. The encomiums on the deceased by the Secretary were endorsed and supplemented by Mr. Hudson and Professor Seeley, and resolutions were entered on the minutes recording the sorrow of the American Institute and of the Farmers' Club at the loss of one so eminent in his profession, so distinguished as an author, so kind and courteous in his manner, and so ready at all times to combine instruction with entertainment by drawing upon the vast fund of practical knowledge he had acquired during a life of more than fourscore years.

Mr. MASON then exhibited to the Section some prints from negatives on dry plates known as Newton's emulsion plates, and said: Some of these were made during a severe rain storm in the middle of the afternoon of Monday, August 25th. I exposed three plates which I can name, the two of the old well, and the one of the gentleman sitting in the porch of the house. I was obliged to hold an umbrella over myself and the camera to prevent getting drenched, and was surprised to get as good plates as I did. I observed a somewhat peculiar and, to me, strong effect of light this summer while on a visit to the Sterling Mountains, in the vicinity of the iron mines. On account of the necessity of roasting the iron ore to burn out the sulphur, the air in the vicinity of the furnaces is so impregnated with the sulphur vapour that it affects the light very materially. I also observed in the mountain regions that where almost the entire surface is covered with a second growth of dense foliage, very green, the light seemed to be absorbed by the foliage, and the atmosphere contained a great deal less actinism, photographically speaking, than in a district where much of the ground was cleared, and the light reflected from surrounding objects. In consequence of this I gave some of my plates sixty seconds, which was too short an exposure. After a three days' rain storm I visited the summits of two mountains, and exposed plates. I gave them from ten to twenty seconds, and all had too much exposure; five or six seconds would have been ample time. The atmosphere was very clear, having been washed for those three days. I was obliged to be very careful in developing to use a great deal of bromide to restrain the action of the developer. My experience with the plates, as far as I used them, was that they were as sensitive as wet bath plates. In this connection I have brought a little lantern which I use in developing; it weighs one ounce and a-half, is made of mica, two thicknesses, flooded with a solution of aniline in collodion, put together the collodion surfaces inside, after it is dried. The mica is moulded in four flaps or sides, hinged with cloth; it is very light and portable, and can be transported without danger of breaking. Before we adjourn I would like to ask if there is a gentleman present who is conversant with any instrument—which might be termed an actinometer—for the measurement of light during exposure in the camera, that can be used successfully with any

of our ordinary methods of landscape work. Such an instrument would be very useful in the field.

Mr. NEWTON: It is really something that is needed very much, as can be seen by Mr. Mason's experience in the country—exposing plates a minute, and not having them over-exposed, and another time exposing them in the same light (to a casual observer), and yet not requiring more than one-tenth of the time. An amateur would not be very likely to succeed in making a picture unless he had something to guide him in the time of exposure; a person accustomed to working out of doors becomes familiar with the illuminations on the ground glass, so that he can usually judge of the strength of light very accurately. Now in different parts of the country at all times of the year there is that same latitude existing, as I can testify. At Niagara Falls the time of exposure is not more than one-sixth or one-eighth of what is necessary in the Central Park in this city. Mr. Roche, I presume, can testify to that.

—Messrs. ROCHE and DUCHOCHOIS each assented to this statement as corroboration of their own experience in the field.

Mr. TAYLOR: What do you consider the standard of sensitiveness necessary in an actinometer to render it useful for field work?

Mr. MASON: One that would enable you to judge of one second exposure, or ranging from one second to two or three minutes.

Mr. TAYLOR: I shall exhibit such an instrument to the next meeting. I believe it to be the most perfect actinometer that exists. It is the invention of Mr. H. J. Burton, of London.

Professor SEELEY suggested that there is a practical difficulty with any actinometer, invented or to be invented, which may make the use of one impracticable, viz., it measures the light which strikes it, which is a very different thing from the light which strikes the object to be photographed. He would make a practical suggestion as to actinometers. Take a piece of ordinary sensitive paper, and expose it to the direct sun rays, the sky, and then have a little book which should have printed in it the various tints in the order of strength of light, and that, after exposing the little slips of paper, you could compare with the book. I don't suppose that suggestion is new; but it strikes me, it is a proper direction of thinking. Those instruments you see described in books I don't think would be practicable at all. If Mr. Taylor has a small instrument, such as he describes, it must be something beyond anything I ever heard of.

Mr. MASON: One of Professor Seeley's points I have often considered—that is, that the instrument to be effectual should receive and be acted upon by the very light that is to make the picture; that is, the instrument should not be turned to the sky, but so that it receives its light from the view you are about to take. In fact, it should be placed inside the camera, or some similar arrangement, and receive the light through the lens as the sensitive plate receives it.

Talk in the Studio.

—PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The Exhibition will remain open on Friday and Saturday next, November 14th and 15th. It will also be opened on the evening of Saturday, at 7 p.m., and will finally close at 10 p.m.

Mr. F. A. BRIDGE at BRUNSWICK HOUSE.—It will interest many of our readers to learn what the *South London Press* says of the esteemed treasurer of the South London Society. On Monday evening this popular entertainer gave his new monologue entertainment, entitled "Trifles," at the Railway Institution, Brunswick House, Vauxhall, assisted at the piano by Mrs. Elizabeth Stirling. Mr. Bridge's place as a monologist and entertainer is, as many of our readers know, well up in the first flight of those whose aim is to amuse those audiences familiar to institution frequenters. In the role of a snapper-up of unconsidered trifles he thoroughly sustained his reputation, and those present heartily enjoyed the anecdotes (many of them, however, somewhat ancient guests) with which the monologue is interspersed. It was also interpolated with a number of songs, which were by no means the least enjoyable feature of the entertainment.

CETEWAYO.—Mr. F. York is good enough to call our attention to the fact that Mr. Bruton, of Cape Town, had taken some portraits of the Zulu Chief which had been sent to England for publication, so that our statement to the effect that those taken by Messrs. Crews and Van Lahn were the last which would be taken was incorrect.

NEW PHOTO PRINTING PROCESS.—A new method by Herr Schahl is to coat a thin zinc plate with chromated gelatine, which he then exposes under a negative. The film is then rolled up with some reducing substance, which adheres only to the parts affected by the light. Tracing paper impregnated with iron is then pressed against the plate, and the iron being reduced at those places, an image is obtained, which is said to be much more delicate than one produced by ordinary photolithography.—*Scientific American*.

LIGHT AND WARMTH.—Professor Rood divides the spectrum of white light into 12 parts, and multiplies the space occupied by each part by the relative luminous intensity. In that way he obtains the following numbers: Red, 54; orange red, 140; pure orange, 80; orange yellow, 114; yellow, 54; greenish yellow, 206; yellowish green, 121; green and greenish blue, 134; prussian blue, 32; blue, 40; violet approaching to ultramarine, 20; pure violet, 5. The quantity of light in the "warm" colours is thus three times greater than that in the "cold" colours.

PREPARATION OF ALBUMENIZED PAPER.—The *Scientific American* says:—"Leicester supplies very large quantities, and many of the largest firms in the kingdom are supplied by Messrs. Meadows and Son. No less than 5,000 eggs passed through the hands of those engaged, the whites only being utilized; and the enormous number of yolks are more than sufficient to supply Messrs. Dent's manufactory at Worcester, the yolks being in great demand for glove purposes. There is a demand for the yolks in Leicester for confectionary purposes; but the supply is more than being consumed, many being thrown away daily. Every sheet has to be bathed singly, and each pressed before the ream is allowed to pass out of the hands of the manufacturers. There are all kinds of tints; and the senior member of the firm being a practical chemist, and one of the best known among the members of the Pharmaceutical Society, brings his scientific knowledge to bear. It may not be uninteresting to know that a first-class hand—females only being employed, owing to their tender manipulation—can earn as much as thirty-six shillings a week; many can earn twenty shillings, and even half-timers can receive weekly as much as eight shillings, and this without having the disadvantage of being in badly-ventilated premises.

To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future.

* * "LOOKING BACK." **THE RETOUCHING MEDIUM.**—To several correspondents who have sent stamped envelopes, we have sent information regarding the retouching medium recommended in "Looking Back" a few weeks ago. Several applicants have written without observing the condition of sending a stamped and addressed envelope, and one, when reminded of the omission, politely replied that he was quite positive that he had sent a stamp. As we see no impropriety under the circumstances in making public the name of the firm supplying the retouching medium, we will avoid further trouble to our correspondents and ourselves by mentioning here that it is the retouching medium of the Autotype Company to which our contributor refers in "Looking Back."

G. N.—To secure a rich purple black tone, you must have a good brilliant negative, and print deep. With a weak negative it is impossible to secure rich, deep-toned prints.

A SUBSCRIBER.—The probable cause for the faint light-coloured lines in the direction of the dip is floating scum on the surface of the silver solution. Take a few strips of clean blotting-paper and draw them over the surface of the solution in the bath, until you remove all trace of a greasy metallic looking scum, and then proceed to try the bath with a plate, and if it is still unsatisfactory let us know the result. We regret that we have not time to answer photographic questions by post.

SMITH AND SON.—Any article made of pure silver ought to have the "hall mark," which consists of a series of small designs which alter every year. If you require a proper assay to ascertain the quality of the silver, you must send it to a refiner. If you are anxious to test it yourself, take a piece of the metal, and dissolve it in nitric acid. When all is dissolved, add hydrochloric acid to precipitate the silver, which will fall as a white chloride, the alloy (probably copper) remaining in solution, which will be green.

A CONSTANT READER.—The position and design of your projected studio will do very well if you have an uninterrupted light. Of course you intend to carry the side light to within two feet or so of the ground. We see no advantage in taking in the side light towards the centre as in design No. 2. We should prefer it kept straight.

STEPHEN PERRY.—The common defect of collodion prints is the grey slaty tone. The best mode of avoiding this is to work in a good light, giving full exposure and quick development. Pyrogallie acid should be used for development; say, pyro, 2 grains; acetic acid, 30 minims; water, 1 ounce. Tone with a neutral solution of chloride of gold one grain to an ounce of water. This will give you rich black or purple black tones.

F. C. K.—We do not know anything of the lens you mention, nor can we offer a guess. The diameter of a lens affords no indication of the size it will cover; that is decided by its focus and aperture. We do not remember the name you mention as an optician or maker of lenses.

ANXIOUS.—You will see on a moment's reflection how impossible it would be for us to attempt to answer your question as to which of the commercial samples of rapid gelatine plates. It would be very unfair to publish an opinion if we could do so. But even if it would be fair, it would require a most carefully conducted and exhaustive series of experiments to arrive at a conclusion. We can simply say we have heard good reports of all of them at times.

B. D.—As a rule, a good negative, taken with good chemicals and good light, does not require much intensification, but comes right with the single operation of developing.

H. NACH.—The publication called *Light* is a weekly journal published in Fleet Street, No. 40, we believe; it can be obtained through any news agent or bookseller. We do not know of any place where you can buy French weights and measures in town; but your stock dealer will doubtless be able to get such things for you.

J. G.—For a beginner in portraiture we should recommend a card lens and camera, and one for whole plate or 10 by 8 plates.

Further notice of the Photographic Exhibition, and several articles in type, are compelled to stand over for lack of space.

PHOTOGRAPHIC CLUB.—Report of preliminary proceedings in our next.

Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

- MARSH Brothers**, Henley-on-Thames,
Six Photographs of Right Hon. W. H. Smith, M.P.
- MESSRS. TATTERSALL & ROGERS**, Accrington,
Photograph of Badge and Chain of Mayor of Accrington.
Photograph of the Borough Mace of Accrington.
Three Photographs of J. E. Lightfoot, Mayor of Accrington.
- MR. MASSEY**, Battersea,
Three Photographs of Mr. Harry Courtney.
- MR. W. G. HONEY**, Devises,
Photograph of the Estcourt Memorial.
- MR. DONNER**, Watford,
Three Photographs of Sir Henry Rawlinson.
- MR. BROADHEAD**, Leicester,
Photograph of Cardinal Manning.
Photograph of Group of Cardinal Manning, and eight other
- MR. M. GUTTENBURG**, Clifton,
Three photographs of Bishop of Exeter.
- MR. H. HAYMAN**, Launceston,
Photograph of Rev. W. G. Pearse.

The Photographic News, November 21, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

STEEL FOR CAMERA STANDS—LECTURES ON PHOTOGRAPHY—SUMMER-TIME AND PHOTOGRAPHY.

Steel for Camera Stands.—We see that steel—which has lately been introduced for construction purposes for all sorts of purposes—from lady's dress-holders to ponderous battle-ships—has now been adopted for camera stands. M. Eugene Cheron recently exhibited to the French Photographic Society, it seems, a steel camera-stand weighing but some seven hundred and fifty to eight hundred grammes, and fitting into a small leather case that could be carried in a tourist's pocket. We are glad that this strong and flexible metal has thus been made use of, and in connection with an apparatus where it should be found very useful. Our Paris Correspondent last week gives a short account of M. Cheron's stand, and that is all the information we possess on the subject; but we can very well understand that if the qualities of steel are properly made use of, the result would be a stand of considerable value. We are told that with it there is no fear of the slightest oscillation; and if this is really the case, the innovation is great indeed. In the case of small camera stands, light and portable, such as are usually employed by travellers and tourists, the one serious drawback is oscillation. We have seen the most charming little cameras made for travellers, fitted with every convenient detail, and resembling a piece of jewelry, so deftly and perfectly were they put together. But the skill and workmanship spent on their construction has been rendered vain by reason of the impossibility of keeping them steady out of doors. There is no need for a wind to shake the Zephyr apparatus. The softest breath of air is enough to make the tiny apparatus tremble, set up on its slender tripod. Protect how you will by tree, trunk, wall, or umbrella, you can see your instrument perceptibly shaking, and the result is that when you get home and develop your pictures, one-half of them are found to be fuzzy and unsharp. Anything, therefore, that will give us a light and portable stand, which at the same time may be relied upon for steadiness, must be regarded with favour, and we cannot help thinking that in steel may be found the desideratum for which we have been looking and longing. By making good use of the elasticity of steel, and employing it to form a steady frame-work for a stand, there should be no difficulty in securing a stout and stable structure, which, when taken to pieces, need consist of but a few light bows and rods of metal. There are many ways, no doubt, of rendering the slender wooden tripod that a tourist usually employs more steady by employing a few tent-pegs and lines, or the rougher expedient of a weighty stone; but all these contrivances add to the difficulty of getting pictures, and are never satisfactory, from the fact that they really add to the weight and impedimenta which the photographer must carry. In our time we have had some experience of camera-stands in travelling, and therefore speak upon the subject with some sympathy. We have tried the simple Alpen-stock, which splits into three, and is then made to support the camera. We have used the expedient of bracing three walking-sticks together, adapted to the purpose before starting; we have employed a sort of umbrella-stick, pegged down to the ground on all sides, and we have always found that rigidity and steadiness increased only in the ratio of the weight of the stand. It, therefore, we wanted a firm stand, it was necessary to carry plenty of weight. With the use of steel, however, we hope the much-vexed difficulty will be overcome, and before long our makers in London will no doubt follow suit of those in Paris, and furnish us with firm and portable stands made from this material.

Lectures on Photography.—It seems that the French capital is following the example of Brussels and Vienna, and in-

stituting a series of public lectures on photography. How long will it be, we wonder, before such a step is taken in London? M. Davanne, we are informed, than whom a more capable man could not be found, is engaged to deliver at the Sorbonne a series of six lectures on photography at the expense of the State, while M. Leon Vidal, whose name is well known to the readers of this journal, has, it seems, been officially appointed professor of a course of photography at the National School of Decorative Art in Paris. In his case, also, the lectures will be public, the expenses being derived from a grant administered by the State. So that we have here two courses of lectures to be delivered in Paris on photography, where those who desire to occupy themselves with the art may learn something. In this country, science and art are left pretty much to look after themselves, and if we waited for a spontaneous grant from Government to supply courses of practical lectures of this kind, we should have to wait long. It is necessary, therefore, to turn elsewhere for such aid, and we cannot help thinking that the Photographic Society might help with advantage. It is notorious that both on the subjects of chemistry and optics our photographers, as a rule, are deficient; even those in the foremost rank might be better informed in the matter of reactions and the laws of light, and thus a really good course of lectures on these subjects should be welcome with us. There are few photo-chemists, probably, capable of giving such a series of lectures as practical photographers desire, but nevertheless they are to be found, if the council of the Photographic Society desired to make the experiment. There would be little use in having the ordinary professor of chemistry to lecture to photographers, since it is not the general outline of that science, but chemistry in special relation to photography, that is desired; and, strange as it may seem, there are a very large number of chemists who are perfectly innocent of photographic practice and processes. In respect to optics, again, it would be necessary to enlist someone into the service who is familiar with the construction of photographic lenses in particular, and not a physicist who has paid the subject no special attention. It is but a few years since that Professor Stokes, the well-known secretary to the Royal Society, gave a most interesting lecture at one of the meetings of the Photographic Society, and showed how very deficient most of us were in the laws of optics that govern our every-day work. On that occasion, we remember, Professor Stokes spoke enthusiastically of the services rendered to photographers by Mr. J. H. Dallmeyer, and this leads us to suggest that if at any time the idea we have just put forward about lectures should ever come to be entertained, Mr. Dallmeyer would be one of those able and competent to treat on the subject of optics before photographers.

Summer-time and Photography.—We have just received a very complimentary letter of thanks from a gentleman to whom we had forwarded a ticket of admission to the Photographic Exhibition. The gentleman in question is a journalist, and moreover an art-critic. He says nothing one way or another about the art aspect of the pictures he saw, but he is enthusiastic upon the subject of having spent an hour on a cold inhospitable day among reminiscences of summer time. It was like strolling up a country lane, he says, to stand opposite some of Mr. Bedford's pictures, while a delicate study of foliage by Payne Jennings caused him to cross and recross the room several times, so that he might feast enough upon the summer scene. We know a gentleman who likes to have *Punch* bound, so that in the hot summer days he may refresh himself with a sight of skating and snow-ball pictures, while in winter he can recall what summer is like by a glance at some of the sunny sea-side sketches to be found in the London Charivari. Our friend at the Exhibition looked at the pictures as evidence that we have summer-time sometimes, and certainly this is a very good way of enjoying good photographs.

THE MISHAPS OF A PHOTOGRAPHIC TOUR.

BY JOHN URIE.*

THE true artist or poet, whose province is to depict the beautiful, cannot have too much of the invigorating stimulus supplied by pursuits on mountain or by flood. The varied phases of the landscape are all suggestive—in towering grandeur or softened outline; and, whether Nature frown or smile, the varying scenes have golden stores for him. But it is on the expansive loch or spreading river, with their rugged or mountainous shores, when your true artist is watching the nimble movements of the finny tribes below which he is bent on capturing, and the passing light and shadows are adding to the charm of the scene, that he realises the close intimacy between art and natural phenomena. With these feelings uppermost, and having arranged with a party of fishing friends to take a tour along the Callander and Oban Railway, I thought I might “kill two birds with one stone” by combining photography with the gentle art of angling.

We left the Caledonian station about seven a.m., passing through Stirling, with its historical castle towering above the town, and casting its shadow over many scenes memorable in Scottish history, with the Wallace Monument in the distance. The Abbey Craig is in sight, and now we are at the Bridge of Allon, celebrated for its mineral wells. Here the artist will be well repaid for lingering for a few days, as many excellent photographs might be taken of the notable scenery around. Dunblane is then reached, with its venerable cathedral, affording many attractive adjuncts for a telling sketch. But we are now running along the beautiful banks of Allan Water, full of pictorial subjects for the camera, and anon are passing the old-fashioned town of Doune, and have a glance at the ruins of Doune Castle, while near at hand is Bracklin falls and the old Roman Camp. Further on is Callander—a beautiful and fashionable resort, and, from its central position, affording many facilities for sketching and photographing. A few miles from hence are the celebrated Trosachs and Loch Katrine, immortalised by Sir Walter Scott in his poetic descriptions in the *Lady of the Lake*.

In leaving Callander we keep close to the river Lenny, and get a view of the celebrated Pass of Lenny, one of the gates to the Highlands, and where a few resolute men might keep a whole army at bay. Here the river foams and tumbles over large masses of rugged rock, forming many effective cascades quite enticing to the photographer in quest of the beautiful; and, I believe, that with rapid dry plates the motion of the falling water might almost be caught.

Now we are running along Loch Lubnaig, where may be seen the graceful swan gliding along its surface in queenlike majesty, and the solitary heron standing in its waters as if asleep, but ever ready to pounce on any unsuspecting fish that may come in his way. The artist's attention is here arrested by the glorious view before him. Rugged, towering mountains and scraggy woods—deep, dark pools and raging waterfalls—combine to make one grand picture, which, like the kaleidoscope, is ever-changing, as you change your point of view, as the shadows on the mighty hills flit from mountain to mountain, or the mist rises or falls, and send their shadows on the calm, narrow lake below, as it winds for five miles through scenery at once picturesque and romantic. We travel through the country of Rob Roy, rendered famous by the daring deeds and raids of the dauntless freebooter, and where repose his remains. We pass on to Loch Earn Head, whose waters lie far below, with Ben Varloch in the distance, as if guardian of the lovely scene. On we go to Killen, the station for Loch Tay, and then enter Glenogle, or the Kyber Pass, and where at every step nature may be seen in every variety of wild and terrific grandeur. The hills look as if torn asunder, leaving the huge, loose fragments of bare rock hanging on the hill side, as if threatening all below with instant destruction.

The train runs along the face of the hill built, as it were, on these fragments of rocks referred to above, and the precipice beneath is awfully grand on the traveller looking down. In the distance runs the wild and picturesque river, the Dochart, with its dark pools, foaming falls, and rugged rapids, made famous by the pictures of Docherty and other artists. We now pass along the shore of Loch Dochart—altogether a lovely loch, or, rather, two swellings in the river Dochart, in one of which is a well-wooded island, where stands one of Rob Roy's strongholds, now a ruin. A mile further on we arrive at Crienlarich, where we are to take up our quarters. Having arrived at the inn, we found seated at one of the side tables a tall, thin gentleman, who, by his drawling remarks and off-hand manner, it could at once be perceived was a good sample of the bouncing Yankee. Fixing his keen, yellow eyes on me, he remarked—“Well, friend, I guess you have got a picture box with you. Going to photograph a bit, I see.” “Yes,” I said, “I want some studies of rocks, foregrounds, and, if possible, Highland cattle.” “Ah,” he said, “it is quite a picture.” “What! the camera you mean?” “No! No!” he replied, “the country. You can see it all at once as a miniature. Guess, if I could get high enough, I could take a view of it all on one plate. Why, if you saw our hills, lakes, and falls, one of each would make all you have in this 'ere old country of yours. Why, our man are taller and our women fairer—” “And you talk much taller,” I interposed. “Guess you'd like to see my box and tube—not the old thing you have here. I am rather scared to show it, as I wish to bargain the invention for a hundred dollars, I calculate, to pay my trip before recrossing the Atlantic.”

And certainly it was not the “old thing,” but a skeleton camera formed with some hinged pieces of wood for the bottom and front, and brass wires to fold for keeping a covering of india-rubber cloth up to form the square camera. In the sides of this cloth were sleeves for inserting the hands when changing the dry plates. On the top was a small red glass to see through, and also a red glass to put into his focussing frame. The pictures he showed me were very fine in detail, taken by the collodio-bromide process. “This is an improvement of my own,” he said, “on Newton's process, and I guess I will be able to take all the colours with it slick off, and no more of you daubers and tarned painters!”

I tried hard to get this wonderful discovery from him, but all my efforts were useless. He got “scarred” at me, and would say no more about it; but I have a strong opinion it was all a myth, as he appeared to be under the influence of our mountain dew. Meanwhile our party arranged to go to Loch Dochart, to fish for trout, till dinner time; and, getting out in two boats, we enjoyed ourselves, floating before the wind, and casting our flies in the water we hooked about two dozen fine trout. It is interesting to watch the flies skimming along the water, and the plunge of the fish at them; then you forget all else, and are at peace with all the world. Again, when pulling back to catch the wind you can watch the varying effects on the surrounding landscape.

I had brought my camera to take some views of the old castle, situated on an island in the loch, but I had been so absorbed in plying my rod, that I forgot all about it till one of the most striking effects I ever witnessed was brought before me. The crumbling walls of the old castle were in deep shadow, the light here and there tipping the prominent juttings, and glancing through the rich foliage of the variegated trees, which were reflected from the mirror-like surface of the lake. The adjoining hills were cast in misty haze, forming an indistinct background, and combining to produce a perfect ideal of a fairy scene of surpassing beauty. I called to my friends to pull for the shore that I might get a photograph of it, but they could not see it with my eyes, and would not be persuaded to leave off fishing, and when I got ashore the beauty was

* Read before the Glasgow Photographic Association.

gone. It had lost the sparkling light, and the once lovely scene was now a cold, grey, lifeless mass.

We resolved after dinner to go up the river—my friends to fish and assist me in photographing some Highland cattle. We at once made for the river side, where the cattle were feeding. Getting my camera placed in a corner of the field, my friends now commenced to collect the animals together and drive them towards the corner where the camera and I were placed. But no sooner were they placed in order than the undisciplined brutes would break their ranks, and rushing together make a furious stampede, as if bent on sweeping from the field with their long horns both myself and the camera. After several repetitions of this I managed at last to get one to stand quiet, and had it in the focus of my lens, but I was too near; it was too large for my plate. I took the camera and stand in my arms, my head still below the dark cloth, and, moving backwards, stumbled over a small bank, stand and camera going right over my head. On getting to my knees, I found that my friends and the cattle were all gone! In the distance, however, was seen approaching, with all his might, a Highland gillie surrounded by a number of collie dogs, and making straight for me with a determined grin—the collies yelping and showing their teeth, as if bent on using them on my poor carcase. The gillie roared out—“What the mischief you'll pe run the besties through the field for?” I explained in the mildest manner what I wanted; but he would not be reconciled till I brought out my flask, which is a balm for all the ills a Celt is troubled with. He then commenced to go in amongst the cattle, and it was astonishing to observe how obedient and soothed the animals seemed to become, as if they knew their protector. I got some very good pictures after a great deal of labour, but felt a little exhausted.

I threw myself down on a bank by the riverside, admiring the varying effects on the distant mountains. On looking up the murmuring river, the ripple dancing and reflecting back the golden rays of the declining sun, the rich peach-like bloom resting upon the mountains, and the bold, rocky foreground of the river, with the rich brown colour of the stunted oak, and deep dark green of the Scotch fir—and in musing reverie exclaimed—“Oh for a process by which these colours could be taken!” A voice near me said, “Come with me and I will show it you.” On looking up I could see my friend the Yankee bending over me. I rose and followed him to an old hut close by. We entered, he closed the door, and took off his long waterproof overcoat, and placed it against the chinks of the door to keep out the daylight. Taking a small dark lantern from his pocket, which threw a deep red, unnatural reflection on the old rafters, casting their shadows on the turf roof, he solemnly said, at the same time drawing himself up to his full length, and assuming a look of stern gravity—“You must swear not to divulge this secret to any living man.” He took a number of black boxes from his pockets, and also bottles, which I tried to get a smell of as he turned his back; but he was too sharp for me. He took one of the plates from a box, and I could perceive it was all of a glow with bright prismatic colours. He said, pouring on the plate a white liquid-like bromide emulsion—“The light will make the whites permanent in proportion to its intensity, and the colours on the plate will shine through and will produce a picture as bright as that outside, by the oxidation of the silver compound. The plate was exposed, and I stared in amazement as I saw the glowing colours of the original grow before my very eyes. I smell, taste, and feel for the causes, but none are apparent, except it be the fumes of alcohol, with a small trace of sulphur. I said—“It will not stand; it is the glow of this light that deceives the eye.” He said—“Take it to the door and judge for yourself.” I opened the door. O! magic! it is bright and glowing as the scene before me! I returned to the hut, and the Yankee appeared in my eyes much taller than before. “Are you satisfied now?” he asked; “I guess that

is tarned smart; and that, with my rapid dry plates, will be the process of the future. But that is not all. I have discovered a new reflector by which the rays are all concentrated on the sitter. I can take a picture by the ordinary gas in the darkest place with my gelatine plates.” Here he unfolded an old umbrella, the inside lined with silver foil; he threw it over his shoulder and turned out the red light. I could now see a blue haze gather round his head. It gradually got brighter until his eyes glared like two electric lights. The flame now poured out of his mouth and nostrils. It got more intense, and I could see his thin frame all ablaze. The light now became so bright and dazzling, and the heat so intense, that I put my hand over my eyes for protection, exclaiming—“It is not the Luxograph; it is spontaneous combustion!”

I awoke from my troubled dream, the sun shining right in my eyes, and as I struggled to realise my position again exclaimed—“I see it all now! He has been too often at the flask!” My ears were now filled with the loud laughter of my fishing friends all around, as one held the whiskey flask to my mouth, while another was putting a live trout down my back. They had hid all my apparatus. One had my plate-box in his hand with the lid open, and all my plates destroyed. Quite disappointed with this unlooked-for termination to my photographic tour, I immediately packed up my apparatus, inwardly resolving that if ever again I ventured on a similar “cruise” it should be with those able to appreciate the beautiful art.

While on this subject I may state that nearly all our great artists have been passionate anglers, and have drunk to the full the music of the murmuring ripple, or the wilder dashing of the breakers. And why is all this? Because in all these ever-varying aspects of the scene the artist has something to work upon—some new hint from the infinite phenomena of nature; and it is only as he is successful in transmitting these faithfully to his canvas that art becomes associated with the noblest aspirations of human genius. Robert Burns sums up the education of the poet in the following couplet, and the like may be said of the artist:—

“Gie me yae spark o' nature's fire—
That's a' the learning I desire!”

DAMAGING NEGATIVES.

A CASE of considerable interest to photographers occupied the attention of the learned judge of the Edmonton County Court for a considerable period on Friday and Saturday, November 7 and 8th. Mr. Chas. Tune (trading as Tune and Co.) a photographer, at the corner of White Hart Lane, Tottenham, sued Mr. Melhuish, photographer and secretary of the Photographic Association, of 12, York Place, Portman Square, to recover £7 10s. for printing photographs from negatives. Mr. Avery, solicitor, appeared for plaintiff, and Mr. Peckham, solicitor, for defendant. The latter admitted the debt, but set up a counter claim of £10 for damage done to certain negatives while they were in plaintiff's possession. The evidence in support of the counter claim was to the effect that when the negatives were sent to Mr. Tune in December 1878 they were in good condition, and that when they were fetched away on the 15th of October last, they were found to be useless through being injured (as was contended) by having been kept in a damp place while they were upon Mr. Tune's premises. The negatives were from three pictures by the old masters, and the prints were sold at eight shillings each without frames. The negatives, being valuable ones, had been kept in a separate room at the top of the house, and was a dry and otherwise suitable place for the purpose. In cross-examination Mr. Melhuish stated that the negatives were fourteen years old; that he did not see them packed before being taken to plaintiff, but knew that they were wrapped in paper; that it was absolutely impossible for any portion of the varnish to be rubbed off through the negatives being packed in paper; that they were not reticulated when they left his premises, and that it was possible to stop reticulation after it began, because it did not extend after the varnish became dry. In reply to the judge, Mr. Melhuish said the white spots on the prints from the negatives could be touched out, but that there was no means of removing the black spots, which had

been caused by the film coming off in consequence of the negatives having got wet after leaving his premises. The defence was that when the negatives were received by Mr. Tune, he found that reticulation had commenced; that certain repairs were done, and the printing executed; that the prints were sent home and paid for (the claim being for other printing done subsequently); that the negatives were then put in a room having a temperature of 110 degrees, where Mr. Tune kept his own negatives; that they had never been subjected to damp; that they had been left at the owner's own risk; and that the injury had been caused by the progress of reticulation, which, like mortification in the human body, could not be stopped after it had once set in, the original cause of reticulation being damp. The judge said the complaint of Mr. Melhuish was not that want of skill had been shown in printing, but that the injury to the negatives had been caused by the mode in which they had been kept after the copies were taken off. It was obvious, however, that they were in fair condition when the printing was done; the prints themselves proved that; but when they were returned three weeks ago they were in bad condition, therefore they must have become wrong in the interval. Mr. Tune, however, was not bound to keep them. They were sent to him for printing purposes only, and he kept them for the convenience of Mr. Melhuish and placed them where he stored his own, which was all that he could be expected to do. If there had been a continuous engagement to keep them the case would have been different; but Mr. Melhuish sent the negatives and agreed to fetch them away. Mr. Tune, therefore, was only an unpaid custodian, and had used all precaution to keep them in safety. Mr. Tune consequently was entitled to a verdict. Judgment was then given against the counter claim with all costs.

THE GELATINE PROCESS.

A CORRESPONDENT of the *English Mechanic* gives his experience in working the gelatine process. He says:—

Having worked at this process for four or five years, I give the following as the simplest and most convenient way of working which I have yet found:—For 3 ounces of emulsion take 20 grains of ammonium bromide, 8 grains of Nelson's fine-cut gelatine, or the No. 1 gelatine of the same maker. Place the ammonium bromide and the gelatine in an 8oz. or 10oz. bottle, and pour on 2 drachms of distilled water. In another 3oz. bottle place 30 grains of silver nitrate, and pour on 1½ drachm of distilled water; swirl it about until quite dissolved. Have a pot of boiling water holding about a quart. When the gelatine has soaked for ten or fifteen minutes, take the pot off the fire and let it cool down for five minutes or so; then introduce the bottle with the gelatine very gradually until you can let right down into the water without cracking.

When it has become thoroughly heated shake the bottle slightly, so as to mix the gelatine and water well together; then take all into the dark-room and drop a few drops of the silver solution into the bromised gelatine. Shake well. Then add a few more drops and shake again, and so on until all the silver is got into the gelatine; then wash out the silver bottle with ½ drachm of distilled water, and add it to the emulsion. Replace the bottle in the hot water, and cover it up with a cloth. Let it remain until the water is nearly cold, about two hours or more; then add 52 grains more gelatine. Turn the bottle about so as to well wet the fresh gelatine, and let it soak ten minutes, then dissolve in warm water. When the gelatine is all dissolved and thoroughly mixed with the emulsion, cork or stopper the bottle, and lay it, side down, in a pan or basin of cold water. Keep turning it round for a few minutes, when the emulsion, being very thick, will set in a film round the sides of the bottle. When quite set and firm, fill the bottle with cold water, and change three or four times during five or six hours, when the bottle may be turned upside down to drain for a few minutes; then add 1½ ounce of distilled water, dissolve by placing in warm water, filter into a four-ounce bottle marked at three ounces. A filter may be made by tying a piece of muslin over the neck of a bottle with the bottom cut off. Take a square piece of muslin, fold it in quarters, open it so that it forms a

conical bag; when filtering, let the point of the filter go just inside the neck of the bottle; add 3 drachms of mythylated spirit, and make up to the 3oz. mark with distilled water. Turn the bottle about until all the oily lines caused by the spirit are gone.

The emulsion is now ready for coating the plates. Pour a pool in the centre of the plate, incline the plate so that it flows all over (if any trouble is found the emulsion may be conducted over the plate with a strip of glass), return the excess to the bottle, letting the corner of plate touch the inside of the neck. Leave enough on the plate to form a pretty opaque film. Lay the plate down on a piece of plate-glass about two feet square, which has been levelled on three screws. Screwed into a block of wood and placed on a table, a board should be supported about an inch above the plate to catch falling dust. Four wood clamps at the corners of the plate will do, the back ones to have an upright piece, so that the board may be raised up like the back of a hook, as each plate is coated and laid down. During warm weather the coating must be done in a cool room, or there will be trouble in getting the plates to set. When set, place in a drying box, which should have draught of air conducted through it, or if the coating room can be kept dark they may be left on the glass plate or set up on end on shelves, when they will dry in ten or twelve hours.

These plates, in a good light, may be exposed about five seconds with a 9in. focus lens, ½ in. stop or with a 4½ in. lens, ¼ in. stop, as quickly as the cap can be taken off and replaced. They may be developed as follows:—To every drachm of a 2-grain to the ounce of pyrogalllic acid solution add one drop of the following mixture: (1 drachm of water, 3 drachms of strong liquid ammonia, and 1 drachm of potassium bromide). If the plates have not been over-exposed this will develop them to printing density. Before development the plates should be soaked in cold water for a minute or two; when developed wash well and fix in saturated solution of hyposulphite of soda, again well washed, and left a quarter-of-an-hour, film downwards, in a basin of cold water; the corners of the plate coming against the round sides of the basin keep the plate near the top of the water, so as to allow the hypo. to soak out and fall to the bottom; they may then be set up on end to dry, *not* near a fire. I think the chrysoidine may be obtained at Judson's. What I use is dark red tissue paper, varnished with shellac varnish, as the front of a lantern which holds a small paraffine lamp.

"PHOTOGRAPHED LIKE THAT!"*

DOUBTLESS, many persons would be glad to bring the sun into the Libel Court. After an evening party, prolonged into the small hours of the morning, his Celestial Majesty (who, by the way, on this occasion is not to be confounded with the Emperor of China) frequently dispels the illusions conjured up by the most delicate *rouge* and the very finest *blanc de perle*. Yet, after all, the family brougham, or the less-aristocratic four-wheeler, afford ample and welcome shelter to those who desire to shield their charms from anything more searching than wax candle-light. But when the sun calls to his aid photography, the consequences are more serious, because longer enduring. The school-boy's earliest experience is the meaning of *littera scripta manet*, and the belle's last lesson, that it is a difficult matter to get rid of an unflattering negative. That this is certainly the case has been proved by the declaration on oath of the husband of one of the fairest of our beauties, that the threat of a solicitor (usually more efficacious than the aid of wild omnibuses) is powerless to prevent the appearance of popular cartes in fashionable shop-windows.

At such a time as this, when photography is claiming a large share of public attention, it will not be out of place to glance at some of the better-known sun-pictures, with a view to submitting them to a little amiable criticism. To deal harshly with an "arrangement" of forest trees, hatchets

unstarched shirts, and Mr. Gladstone, would be as cruel as, breaking a butterfly on the wheel, or writing something intentionally savage about the rather ludicrous demeanour of Sir Thomas Chambers in the lucrative character of Recorder of London. Again, actors and actresses should be free from hostile commentary when they appear on paste, instead of deal, boards. In an age of advertising, it is natural enough that eminent tragedians should desire to show their heads, and burlesque *artistes* their feet, to thousands of perambulating admirers. He who gazes upon talent in the shop in the morning, is frequently induced to stare at talent from the pit in the evening. The reigning goddesses of our *salons*, now that it is known that they are photographed against their will, should also be allowed to escape the reviewer's pen. Accidents will always happen, and it is a lady's misfortune, rather than her fault, if she be caught by an energetic operator in the midst of an artificial snowstorm, or in the act of trying on a "large and furry hat." But the matter is altogether different with public characters of the male sex. It would be absurd in the extreme to pretend, even for a moment, that statesmen, generals, and bishops, had been forced before a hostile camera. These individuals are free agents, and although the expression upon some of their faces certainly suggests the idea that a photographer is threatening them with a revolver, from behind a corner, while he offers them the choice of death or immobility, the chances are, that the scene of their martyrdom was, at any rate, disassociated with recollections of personal violence. Exception may be taken to this assertion on the ground that the *carte-de-visite* of the Premier was unquestionably executed "by Royal command." But then, it must be remembered, that when the Queen most graciously ordered Lord Beaconsfield "to be taken," Her Majesty, no doubt, left the details of the picture entirely in the hands of her distinguished subject. Lord Beaconsfield, and Lord Beaconsfield alone, is responsible for the strange wide-awake hat, the incongruous frock coat, and the duly obtrusive shirt collar. The expression of simulated interest in the advertisement sheet of the newspaper he is reading is also his lordship's own. The humour of the idea is quaint in the extreme, and serves as an excellent foil to the almost tragic poetry of the languid grasp in which the journal is wearily—oh, so wearily—held. But, taken altogether, the picture is disappointing. The levity of the shirt-collar is too marked, and the fun of the wide-awake hat too broad. Remembering the circumstances under which his portrait was being taken, Lord Beaconsfield evidently wished to perpetrate a harmless and dignified joke, calculated to raise a kindly patronising smile to royal lips. In this he must have failed, as his picture, to be frank, only proves him to be an author capable of sartorial buffoonery. Leaving the Premier, and turning to a photograph of the Leader of the Opposition in the House of Commons, a strange resemblance immediately appears. The expression of dignity is common to both. Lord Beaconsfield, however, is merely pretending, while Lord Hartington is severely in earnest. The heir of Devonshire glares indignantly, as if his pride had been trodden in the very dust by some one suggesting to him that he really ought to consent to appear as "the Third Officer," in the "Lady of Lyons," in some amateur theatricals. The angry fire in his left eye seems to say, "I will play Claude Melnotte, or—nothing!" A ferocious expression is also noticeable in the portrait of the Home Secretary, which is only half subdued by the prominent introduction of a pair of broad-rimmed spectacles. The Duke of Argyll appears with his head defiantly thrown back, with his hair flowing behind him. Lord Cranbrook adopts the same pose, but with considerably less capillary adornment than his noble model. The ample tresses and Byron-collar of Lord Salisbury, coupled with a certain sort of sweet melancholy in the gaze of the Foreign Secretary, foster the hope that some day his lordship may be inclined to publish a little hook of poems entitled, "Sighs from the Breast of a Stricken Gazelle." Mr. Smith, in one of his *cartes*, appears with his hands thrust in his trouser pockets, nourishing

the impression that he is, several inches of him, a sailor. It will be evident at once that it is most desirable that a First Lord of the Admiralty should leave this nautical idea firmly planted in the public mind. Turning from the State to the Church, several *cartes* appear under the heading of "The New Cardinal." A glance discovers that it is John Henry Newman, wearing the same costume as His Eminence of Westminster, Dr. Manning. Some time ago, a photograph was published of the Head of the Birmingham Oratory, in which the Professor was depicted with an expectant smile upon his lips, as if he were waiting to hear a joke or a good story. The present portrait appears to be a sequel of the former one. His Eminence has heard the anecdote in this picture, and seems to be observing with gentle melancholy, "Come, come, it won't do. Your narrative is as old as the hills. I heard it years before I went to Oxford. Now, don't speak—I know what you are going to say. You are about to ask me when a door is not a door? Take my word for it, my good young man, I really know the answer." Close to the latest made English Cardinal is usually found the Bishop of Rochester, who seems to be divided between surprise at finding himself photographed, and determination in maintaining his dignity under the exceptionally trying circumstances of the case. Dr. Parker, of the City Temple, appears in long flowing locks, contrasting forcibly with the neatly arranged "head of hair" of the Reverend Newman Hall. The latter Reverend gentleman assumes an attitude evidently roughly copied from the pose of a bishop of the fourteenth century blessing his flock. After gazing upon this rather cramped position, it is quite a relief to turn to Mr. Spurgeon, comfortably seated upon a very easy chair. Turning from the Church to the Army, the most remarkable portrait reveals itself in the likeness of Lord Chelmsford. This well-known warrior is found in an admirably cut suit of mufti and an anti-regulation beard. The right hand of his lordship rests upon a gigantic book (apparently, a pantomimic edition of the *Field Exercises*), and with his left—doubtless in the absence of a Field Marshal's baton—he clutches at a packet of long-shaped envelopes. It is almost startling to find a tactician of such world-renowned eminence so gentle in appearance, and seemingly so simple, as, certainly, not one man in a thousand would guess that Lord Chelmsford had proved himself a second Wellington. Sir Garnet Wolseley "tones down" a very evident shooting coat, with a dozen and a half of the best and most honourable of Orders. But the hero of the hour among the warriors is, without question, Captain Carey. This gallant officer also (strange to say) assumes mufti, and relinquishes the well-used sword for a walking stick. The ex-King of the Zulus is occasionally seen, or rather his head, as Cetewayo's photographs, in European costume, have not yet reached this country, and, for the moment, the full dress of His Majesty is most likely unconventionally scanty. The portrait of Mr. Ruskin, to turn to Art, is remarkable for a curiously-constructed waistcoat, which the author of the "Stones of Venice" apparently is anxious to force upon the attention of the public. Poetry is represented by Mr. Alfred Tennyson in an old Inverness cape of quaint design, but not very imposing appearance. But, perhaps, the most interesting portrait in the collection is the likeness of Lord Lorne, for it fully accounts for the sudden departure of the Marquis to Canada. After gazing upon the wonderfully-trimmed overcoat assumed by his Lordship, with its eccentric sleeves, huge collar, and gigantic buttons, it becomes plain, to the meanest apprehension, that such a garment could not possibly have been worn in England.

Columbus might be filled with further remarks upon the photographs in the shop-windows, but, from a few, learn the rest. However, it is satisfactory to note that, until the secret of taking portraits with the aid of the sun is lost, there will be plenty of subjects for creating laughter. So long as popular men patronise photography, there will be no lack of suggestions which may be turned to good account on the 5th November.

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PHOSPHORESCENT PHOTOGRAPHS.

SOME months ago, we gave in these pages details of the method which Mr. Woodbury had devised of producing phosphorescent photographs—pictures which were self-luminous in the dark. The method Mr. Woodbury found successful consisted in using the powder process, sometimes described as the "dusting-on" process, using a phosphorescent powder to adhere to the tacky image formed by exposing a bichromated syrup under a cliché. Herr Warnerke has not been successful with that method, but he has employed a still more simple plan of securing his luminous picture. He simply takes an ordinary transparency and backs it with a plate coated with the phosphorescent substance, which, showing through the lights or transparent parts of the photograph, at once gives a luminous image in the dark.

The substance used by Mr. Warnerke was sulphide of calcium. It should be borne in mind that these substances are not self-luminous, but have the power of absorbing and storing up light which has shone upon them. A plate coated with such a substance exposed to sunlight will, if placed in contact with a negative and a sensitive plate, be found to have actually stored sufficient light to print an image of the negative on the sensitive plate. An American contemporary, referring to the matter, says:—

"Two patents have been recently taken out in England for phosphorescent powders. One of the patentees states, in his specification, that his object is to obtain and utilize at nighttime the light absorbed during daytime from sunlight or an artificial light, either by employing the powders after exposure, or by augmenting their brilliancy by means of electricity. The powders are made by taking 100 parts by weight of carbonate of lime, and phosphate of lime produced by the calcination of sea shells; secondly, 100 parts of lime rendered chemically pure by calcination, and after the above are mixed, 25 parts of calcined sea salt are added, then 25 to 50 per cent. of the whole mass of sulphur incorporated therewith by sublimation, 3 to 7 per cent. of colouring matter in a powdered form composed of mono-sulphuret of calcium, barium, strontium, uranium, magnesium, aluminium, or other minerals or substances, producing the same appearances, *i.e.*, which become luminous in the dark. The other patentee says of his phosphorescent substance, that he prefers calcined oyster shells combined with sulphur by exposure to sufficient heat, or a paste formed of neutral arseniate of baryta and gum tragacanth or sulphide of strontia, or sulphide of barium in combination with a small percentage of magnesia. For rendering walls or surfaces for advertising or other purposes luminous in the dark, they are coated with an adhesive substance. The phosphorescent substance is then spread over the surface, and then coated with transparent varnish or other transparent substance."

PHOTOGRAPHIC VISITING CARDS.

WHEN the carte-de-visite portrait was first introduced to the public, the intention was that it should be actually used as a visiting card. Whether it was ever practically employed for such a purpose to any appreciable extent we cannot say; but if it were, the practice never obtained generally. The pretty little portraits were treasured and preserved, and at one time acquired temporarily a new name, being preserved in albums, and called album portraits. The name carte portrait was, however, generally retained, although the idea of using them as real visiting cards had passed away.

It appears there is some probability of the idea being revived. A correspondent of the *Queen*, in a column devoted to "Etiquette," says:—"Send your visiting card by post in the shape of a photograph—a true carte-de-visite—which would be not only a reminder, but an interesting one, and which would give rise to conversation and criticism such as now follows a personal visit, but sooner over. Let the costume of the portrait define the nature of the 'call'; if very distant, send a card in evening or court dress; if more friendly, send one in visiting or walking dress. It might be *de rigueur* never to send the same impression, and thus the expense involved would be as flattering as the hire of a brougham or the waste of half a day. No bad notion this, and one which might lead to a painless reform."

If such a plan become the fashion, it will inevitably give increasing occupation to the portraitist, especially if, as suggested, it be made *de rigueur* never to leave a second impression from the same negative. The idea is a good one, and photographers of taste may facilitate its adoption by devising a neat effective style for the portrait and card, for a special style will be necessary. The ordinary card portrait mounted on a coloured enamel card, and covered at the back with the advertisement of the portraitist, would never be adopted. A neat white—or, it may be, cream-coloured—card with space for the written or engraved name, and a small but pleasing style of portrait, is what is required. Above all, the thing must not be loud or vulgar. Something neat and unobtrusive is desirable. Here is opportunity for the photographer with taste to exercise his invention. If such a fashion were once generally adopted in society, a steady and permanent addition to the occupation and income of many photographic portraitists will be secured—a point certainly worthy of consideration.

THE PHOTOGRAPHIC EXHIBITION.

WE have before remarked that portraiture did not constitute so prominent a feature of the present Exhibition as of many preceding ones; but there is, nevertheless, much good work in this important line. America sends us some of the best. The time was when we looked to America for special excellence in technical effects: brilliant, clean, sharp photography was frequently produced in America, but few persons thought of looking for the highest examples of art photography beyond the Atlantic. This has of late years been considerably changed, and in portraiture, at least, we find especial art qualities present in the examples of American work which come under our notice. On the tables, unframed, will be found a fine collection of the portrait studies of Mr. Napoleon Sarony, an English photographer in so far as he commenced his photographic career in this country, but resident in New York, and as a photographic portraitist, probably not surpassed in any country. Freshness and originality of pose, grace of outline, and richness of light and shade, characterize his work, and, so far as we can judge, faithfulness of likeness is not sacrificed to the more showy characteristics. Of the portraits shown is one of a charming English actress—Miss Ada Cavendish—which is admirable as a likeness. Mr. Sarony's portraits are mounted in a style which is well worth attention, but which has not hitherto been received with much favour amongst English photographers. The print is

mounted very nearly close up to the edge of a stout piece of cardboard, about one-eighth of an inch thick, the edge of which is bevelled towards the front, and gilt. Large prints, whole-plate, and of a size much longer, are so mounted, and are very effective.

Even the West of America has become a pioneer of art progress. Mr. Rocher, of Chicago, has sent a fine display of portraiture of all sizes, from cabinets upwards, and all exceedingly good; perfect technical photography is present in every frame, and very high art qualities in many. Like the works of Sarony, these are distinguished by freshness and originality of pose. If we were disposed to find fault, we might say that at times there is a little too much straining after action, many of the full-length figures being engaged in doing something in which the action is apparent; and suspended action in a picture is apt to become irritating. The large pictures—sixteen by twelve and upwards—are chiefly of full-length figures of ladies; and the grace, beauty, and elegant dress of American ladies lend themselves materially to artistic effect in the pictures. The interiors—which, for the most part, form the backgrounds of the portraits—are well managed and well subordinated, all aiding the primary aim and motive of the picture—the portrait. In some of these pictures there is a slight tendency to blackness, from deep printing, we think. Two we have especially marked as free from this, and having a fine sense of space in the room interior in which the figure stands; these are a portrait of Miss Emma Thursby (285), and one entitled "Departing" (313). The work is so good throughout, that we are glad to congratulate Mr. Rocher on his well-earned medal.

Baby portraiture is a prominent feature in the present Exhibition. Mr. Faulkner, the prince of baby-portraitists, has not given us one of his usual large frames full of infantile charms; but he has sent a few studies of rare beauty, alike as photography, art, and childhood. His series of portraits of royal children, printed in red, after the fashion of Bartolozzi's well-known engravings, are very beautiful. The children, in spite of their royal birth, are really very pretty—some of them exceedingly charming—and the portraiture is in Mr. Faulkner's best style, whilst the exquisitely luminous quality of the red pigment prints is singularly satisfactory. The studies of expression in similar style are equally fine. Mr. H. J. Byrne's frames of child portraiture, produced by the aid of gelatine plates, are very excellent indeed, displaying fine photography, and admirable management of children. Mr. W. E. Debenham also has very good examples of children's portraiture produced by the aid of gelatine plates. The various examples of portraiture on gelatine plates are in no wise inferior to those on wet collodion. A frame of cabinet and carte portraits (89), the negatives having been taken on these plates by Arthur King, are excellent. Two frames of similar portraits from gelatine negatives by E. Gregson and Sons are also very excellent. The portraits from gelatine negatives exhibited by Mr. Cowan—or, to speak by the card, by Messrs. Hill and Saunders, of Porchester Terrace—are more than excellent. The pair of upright pictures (106 and 128) are singularly fine. They are printed on opal glass in carbon, and the first named is interesting to photographers for an element of effect worthy of note. A delicate tint surrounds the image, very similar to an india tint. This tint is obtained simply by the aid of the "safe edge" of the carbon tissue, which is transferred to the opal, leaving a margin of clean opal beyond. The boy's portrait (128) is unsurpassed by anything in the Exhibition by the grace and ease of the pose. It is well worthy of examination for the mode in which the painted floral effects on the background screen are combined and supplemented in the most natural manner by the real accessories placed beside them. The picture is a gem in every respect, and most worthily wins its medal. Some other carbon prints from gelatine negatives (288) by the same firm are also exceedingly fine. The portraits by the powder process (238 and 275) by the same firm are very

charming. Portraits from gelatine negatives, taken in an ordinary sitting room, by W. Cobb and Son, are very good for the conditions; but the effect of the lighting is somewhat heavy. A frame of large portraits (137), by M. Boucher, of Brighton, is very noticeable for the general richness of light and shade, and for the excellence of each portrait when examined in detail. The frame consists of half-a-dozen portraits, all very fine. No. 1, "The Aga's Favourite," is also our favourite. No. 2, "From Erin's Green Isle," is also exceedingly charming. The portraits are in what has come to be known amongst photographers as the Salomonesque style, which is distinguished by largeness and massiveness of manner. These, for highly-finished portraits, are singularly free from retouching. There are several examples of portraiture by the aid of artificial light. Of these some very excellent specimens are exhibited by the Luxograph Company, and several others by the same light are contributed by Mr. G. E. Alder, which are very excellent indeed, and apparently in no way distinguishable from portraits by ordinary daylight. Various examples of the work of the electric light are sent by Mr. Vander Weyde. The skill of an artist of considerable taste is manifest in these, and the lighting, although a little peculiar in some, is very effective. Mr. Hazard's frame of portraits in fancy dresses by artificial light contains some excellent photographs. It is a pity the effect of the frame is marred by the bizarre arrangement of the pictures. The same is true of a frame of good portraits by Mr. J. S. Catford. Several very fine examples of large portraiture sent by Messrs. Thomas and Robert Annun, Professor Rainy, M.D., Lawrence Hill, Professor Lister, and Dr. Dixon, are all noble examples of portraiture, in a style worthy of the distinguished men portrayed. James Russell and Sons send some very fine examples of portraiture, one of which, a group of three ladies (229), has been distinguished by a medal. A frame of cabinet portraits by Lombardi is very good, and a similar adjoining frame, by Barry and Co., is very excellent. A series of four frames, entitled "Little People and their Pets" (268 to 271), by G. Watmough Webster, consisting of portraits of children and their dolls or other toys, is worthy of very high praise for their rare excellency. The number of portraits is very large, and the variety of effect, and good effect, is amazing. The portraits are full of action and expression, and display much tact and skill, as well as artistic feeling and mastery of photography. Lombardi has some very fine large portraits, 277 to 279 being excellent examples. H. S. Mendelsohn has a fine frame of studies taken on dry plates, containing some excellent work. Mr. Hubbard has a fine portrait of a lady (294), unfortunately skyed beyond examination. Mr. P. M. Laws sends some good examples of gaslight portraiture, which will be examined with interest. We think, however, that he has not sent his best examples. Mr. Baker sends children taken on gelatine plates, which are very good. Mr. Fry has a frame of good portraiture on gelatine plates.

In some cases, portraits and *genre* studies run so much in the same groove that we have probably left some portraits to be noticed as subject pictures. These will duly come in a future issue.

FRENCH CORRESPONDENCE.

THE IRON AGE OF PHOTOGRAPHY—PROGRESS OF PHOTO-TYPE—UNION FOR THE PROMOTION OF THE TRADE INTERESTS OF PHOTOGRAPHERS—NEW WORK ON PHOTOGRAPHY WITH GELATINE.

The Iron Age of Photography.—At the last meeting of the Photographic Society of France there were read two highly interesting papers, the one by M. Poitevin, the other by M. Henri Pellet. In both of these papers processes were described for taking positive photographs depending on the application of a salt of iron. Oxalate of iron is used as a developer in the new gelatino-bromide

processes, just as the sulphate is used for the same purpose in those depending on wet collodion. Recently I called the attention of my esteemed readers to a process for taking Woodburytypes, in which is used gelatine rendered insoluble by the application of iron perchloride mixed with a little tartaric acid. The gelatine thus made insoluble is again rendered soluble by the action of the luminous rays. From these few instances which I am able to adduce, and which I could easily make more numerous, may we not conclude that we have at length arrived at a time—or, rather, we have reached a stage—in the life of the photographic art, which will one day, perhaps, receive the name of the iron age? Not that the age of silver is past; on the contrary, it still exists, and in an improved condition, by the employment of gold and of platinum; but, at any rate, we are approaching a period when iron would seem to be about to occupy a more important position in photography—a position where it will reign supreme by the side of and jointly with two other bodies: one carbon, partly belonging to the mineral, partly to the organic kingdom; the other, gelatine, belonging to the organic kingdom alone. The process for taking positive prints described by M. Poitevin endeavours to realise a more economical method of obtaining the pictures by utilizing the reducing action of a proto-salt of iron on some easily reducible substance like silver chloride. In effect, however, this method is new neither in theory nor in practice; iron sulphate has a powerful reducing action, of which advantage is taken to make visible the latent image impressed on silver iodide. So also iron oxalate is used for reducing in Willis's platinum process; and the same organic salt is made to play a similar part in developing a negative on gelatino-bromide; all of which brings us back to the point from which we started: the employment of the reducing action of the salts of iron for obtaining prints, either in Prussian blue, as in the *cyanofer* process of M. Pellet; or in black, as in the ordinary negatives by the ferrocyanide method; or as in the present plan proposed by M. Poitevin. Of all these reactions of iron, the most interesting will, no doubt, be that which will make possible a new *inverse* process of phototypie or carbon printing. I say *inverse*, because, by such a process, we should take a positive image from a positive, while in the ordinary processes a negative is required, in order to obtain a positive. Unfortunately, when the gelatine films have been rendered insoluble by immersing them in a bath of iron perchloride and tartaric or citric acid, their sensitiveness is very considerably reduced; such a film of gelatine, even when very thin and slightly coloured, requires an exposure of a quarter of an hour to direct sunlight in order to acquire complete solubility. In the first place, therefore, we must try to increase the sensitiveness of these films. There is no doubt that this object will be attained, and we shall then possess a very effective photographic process, founded on the principles established by M. Poitevin, enabling us to work with sensitized papers, which, as the gelatine is first made insoluble, will have the advantage of being capable of keeping for an indefinite period of time. One of the most important questions, therefore, which present themselves to our scientific photographers is the discovery of a substance which can confer greater sensitiveness on the gelatine film, that has been rendered completely insoluble by a salt of iron, when exposed to the action of the luminous rays. The principle laid down by Poitevin is a true one; of that there can be no doubt, for it is capable of proof. But there still remains something to be done in order that it may produce practical results, and that something is to render more sensitive the films of gelatine that have been previously made insoluble. I think we may consider it certain that this object will ultimately be attained, and we shall then have made another step in advance, and shall have given our modern stage of photography a further right to the title of the iron age.

Progress of Phototypie.—Some specimens of artotype, the name by which the process of phototypie is known in

the United States of America, have been sent to me by Mr. Wilson, the able and intelligent editor of the *Philadelphia Photographer*. A careful examination of these photographs, which were produced in the studio of Messrs. Harroun and Bierstadt, show that phototypie is practised with very considerable success in the new world. Prints of the same kind are also produced in Germany, especially at Munich, by Herr Obernetter, and the American samples which I have in my possession seem to be quite of equal excellence with those that came to us from Munich. They have quite the same appearance, so that I am induced to believe that the process by which they have been taken is no other than that of Herr Obernetter himself. In England, where this special branch of our art is far from having attained that stage of development which it merits, there are also excellent results, which challenge universal admiration, produced by this method under the auspices of the Autotype Company. The more I examine these beautiful results the more decided is my conviction that this process stands first in point of usefulness and general adaptability; all the other processes are but auxiliary methods serviceable under certain circumstances; but for obtaining a number of prints on a really commercial scale there is no other photographic process to which we can have recourse except that of phototypie, under whatever name it may be worked.

Trades Union for the Photographic Industry in France.—My esteemed friend M. Stebbing, in a letter which he has written to the *Moniteur de la Photographie*, praises the *esprit de corps* which animates the whole body of photographers in England, as illustrated by the handsome subscriptions, by Mr. Henderson and others, in aid of the establishment of a photographic club. In France the same spirit no doubt exists, but the manifestations of it are far from being so spontaneous as they are with you. I am in hopes, however, that some steps will soon be taken to arouse this spirit, and the formation of a union, embracing all the photographers of France and her colonies, which the *Chambre Syndicale de la Photographie* is now actively engaged in promoting, will afford a good proof of its existence. My own idea is, that a representative body should be established at Paris, a body which would have an influence in proportion to the number of members who belonged to it. Such a union is a matter of necessity for an industry which is still too young to have traditions to look back to, so that no organization exists, either legal or administrative, corresponding to the wants of the profession. A special organ in the press, devoted exclusively to the commercial and industrial interests, will serve as a bond of union between all the members of this general guild, and thus a void would be filled, and the wishes would be met of an important profession which already numbers more than 5,000 members, and which does business annually, on an average, amounting to between twenty and thirty millions of francs. This proposal, which I brought forward at the last meeting of the *Chambre Syndicale*, was unanimously approved by all the members present, and all that now remains to be done is to put it into practice. A committee will be nominated for this purpose, and soon we may hope to see a photographic union in active working order, always ready to help and promote all efforts in furtherance of the study of our art, and to defend the interests on which rest the prosperity of our profession; always anxious to stimulate the industrial, and, consequently, technical progress of photographic science. Though we cannot reckon on so large a material assistance as that mentioned by M. Stebbing in his account of the establishment of the English club, we may at any rate rely on a considerable contribution of good wishes, and that will be sufficient, for the present at all events, to attain the object in view.

New Work by M. Chardon.—Yet another book on photography has been published by M. Gauthier-Villars; this time it is a description of the gelatino-bromide of silver process as worked by M. A. Chardon. It would be superfluous to repeat here how conscientious this author is in all

the work that he undertakes, and how all that he says is always worthy of our best attention. In the instance before us it is easily seen that the abandonment of collodion-bromide of silver, notwithstanding its comparative slowness, falls heavy on M. Chardon's heart; he does not wish to give it up altogether, but he feels that though the collodion process has, and always will have, some good in it, gelatine emulsions cannot possibly be ignored, so he does his best to study the latter exhaustively. There is, perhaps, nothing absolutely new in this little tract, but it contains a correct and clear general account of the process, which can only be read with profit. In time we shall no doubt realize the improvements which this beautiful process still lacks, and then the last doubts of our learned colleague will be removed.

LEON VIDAL.

SACCHARO-SULPHATE DEVELOPER.

THE saccharo-sulphate developer, first recommended in the *News* finds favour in France. The *Moniteur* says:—"Mr. Darricau of Marseilles sends us the formula of a developing solution through which, he says, a wonderful rapidity is obtained. Here it is:

Distilled water	...	...	100 c. c.
Saccharo-sulphate of iron	...	...	12½ grains
Acetic acid, crystallizable	...	...	50 drops

"This developer imparts to clichés a very rich tone, similar to that obtained from pyrogallal acid with a light equal to that required for such processes as that of Boissonnas and others. To open and close is sufficient to obtain a cliché which needs no intensifying.

"Mr. Darricau tell us next, how to produce this organico-metallic substance which dealers in photographic materials have not on hand. Take—

Proto-sulphate of iron	...	...	200 grams
Distilled water, boiling	...	...	100 "

Dissolve. Then take—

Rock candy	...	...	50 grams
Distilled water	...	...	30 "

Dissolve.

"Next, mix those two solutions, and the bluish light-green crystals are precipitated. These are gathered and set to dry between the folds of several sheets of white blotting paper, taking care not to use rose or buff-coloured blotting paper. (This is an essential condition).

"The addition of a small quantity of formic acid to this developer would, we think, intensify its action."

HOW TO AVOID SILVER STAINS.

BY J. E. BEEBE.*

PROBABLY the most unpleasant feature connected with photographic chemistry is the unavoidable staining of silver. Most unpleasant it is, both to operator and sitter; and having been able, by a simple expedient, to avoid this annoyance almost entirely, I take this opportunity of bringing it to the more extended notice of the profession.

Near the sink where the negatives are made, I have standing an ounce vial of ordinary tincture of iodine (the vial has, of course, a ground-glass stopper), and while my hands are still wet from the washing of the negative, I shake the bottle, and, with the stopper, smear all stains on my hands with the iodine. Now as to the result.

If my negative has been washing under the tap during the moment I am putting on the tincture, and I proceed to cut it with cyanide, of course by allowing the cleaning solution to run over my finger ends, they are at once freed from all stains. But I find that by using the iodine after each negative is made, and at once, before the silver has time to penetrate very far into the skin, and by a frequent use of good

soap and water, the silver and iodine stains disappear without the use of any cyanide at all.

It takes longer to describe this simple operation than is consumed in doing it, and by a most ordinary economy of time the busiest operator need not lose a moment.

This is a small matter I know, but it may be of use to some photographer who appreciates how much disgust the usual soiled hands inspire, for very many people believe the black colour comes off on their faces or dress, and will aid him in the neatness so essential to success.

A little more neatness as regards spotted clothes and linen would not be amiss, and then the usual trade-marks would be relegated to the resting-place of long hair and mighty hats, and it would be impossible to distinguish a photographer from any other gentleman.

Correspondence.

PHOTOGRAPHIC EXHIBITION.

SIR,—The writer of "In and Out of the Studio," although not mentioning my name, evidently hurls his shaft at me. If one did not grumble, abuses would never be rectified; but his argument is *nihil ad rem*. What I complain of is, not that the Council of the Photographic Society frame rules of which I do not approve, but that, having made certain rules, they do not abide by them, or give timely notice of their inability to do so, and not deceive intending exhibitors, as in this instance, or take advantage of their credulity, as would have been my case had I been simple enough to send my sovereign for so much wall-space, while the more 'cute fellow sends his pictures, and leaves the Society to apply for their charge, knowing that they will not do so, as they cannot afford risking his withdrawing his exhibits. Better not make any rules whatever than pose in this undignified position.

The writer goes on to state that one of the advantages common to both amateurs and professionals is in the fact of their having their work placed side by side with that of the best workers, and in the notice taken of it by the Press.

The first argument would be of some weight if the best men exhibited, which, as a rule, they don't; the second is of doubtful value, seeing the abysmal ignorance displayed by the London Press on all matters photographic; and, further, unless you happen to be in the "set," you have not the slightest chance, no matter how good your work may be, of getting it noticed. As an illustration, I may mention the regularity with which a certain gentleman's productions are commented upon in all the daily and weekly London Press being quite something phenomenal.—I am, sir, yours obediently,

JOHN VAUGHAN.

1, Cheshunt Terrace, Iffley Road, Oxford.

PHOTOGRAPHIC MEETING.

DEAR SIR,—In the last issue of your valuable paper an error happened in the report of the proceedings of the Photographic Society of Great Britain. The facts reported are not only incorrect, but they at the same time permit of a conclusion the very reverse of flattering to me personally. I permit myself to state the correct version of the incident. In consequence of the personal application of the Assistant Secretary to read a paper at the November meeting, I wrote a rather elaborate article on Actinometers, and not only I have been perfectly prepared to read it, but I wished to go as far as possible with reading, knowing that, the paper being extensive, I should require fully two evenings to read it. Our President, wishing to close the technical part of the meeting, in order to give more time to the informal conversation, asked me to interrupt my paper, and postpone the completion of it till December. Conforming myself with that desire of the President, I asked to do so at a more convenient point, and after I completed the description of the electro-actinometer I stopped.

* Philadelphia Photographer.

There is also another error, in the diagrams illustrating my paper read at the South London meeting. The parts forming the camera stand, instead of being drawn in their respective positions, are scattered about, some represented as upside down, which cannot fail to produce perfect confusion.—I remain, dear sir, yours faithfully,

10, Linden Grove, Peckham Rye, Nov. 16. L. WARNERKE.

[In the brief report of the meeting which our space and the limited time permit, we simply record the fact that only a portion of the paper was read; we have not space or time for unimportant details. We cannot agree with our correspondent that the record appears the reverse of flattering to himself. Surely it is less flattering, if that element can at all enter into the case, that he should be requested to leave off by the President, than that he should do so of his own intention. The placing of the diagrams in the South London report is also explained by the necessary economy of space, which has induced our draughtsman to pack them so as to occupy as little space as possible. We do not think any confusion can arise to those interested in studying the arrangement.—ED.]

COPYRIGHT.

DEAR SIR,—There is much difference between the meaning of the word "right," and "copyright." Copyright is defined in Worcester's dictionary in about a dozen lines, while the word "right" occupies about two columns. As this is a matter of some importance, it would be instructive if you would kindly explain why a photographer may not have the right to print from his own negatives, while the other has the copyright in the prints. In Mr. Bassano's letter the last five lines express the same idea as I wished the last five lines in my letter to convey.—Yours truly, A. BROTHERS.

[Copyright exists in the design of the picture, and cannot exist in the print apart from the negative, nor in the negative apart from the print. There are no rights in the case, except such as are created by statute. Hence discussion of abstract right amounts to nothing.—ED.]

Proceedings of Societies.

PHOTOGRAPHIC CLUB.

At a meeting of photographers held at the Freemason's Tavern on Friday, the 7th November, 1879, Mr. Jabez Hughes in the chair,

The CHAIRMAN stated the reason of calling this meeting, and the aim and object of the proposed club, and called upon Mr. Cutchey to read the report of the preliminary committee appointed at the meeting held at Mr. Brittlebank's on the 1st October.

Mr. CUTCHEY then read the following report:—

"Report of the Preliminary Committee of the Photographic Club, read at the meeting held at Freemason's Tavern, November 7th, 1879.

"As an outcome of the meetings held during the summer months at Mr. Brittlebank's, the want of a society that should combine the social with the strictly business element was greatly felt, and the subject, once mooted, was rather warmly taken up, and the idea of forming a Photographic Club was at once started, and several gentlemen promised subscriptions in furtherance of this scheme, one gentleman in particular offering one hundred guineas as an earnest of his views; and accordingly, at a meeting of photographers held at Mr. Brittlebank's, Tottenham Court Road, on the 1st of October, Mr. A. L. HENDERSON in the chair, the following resolutions were passed. It was proposed by Mr. C. G. Cutchey, and seconded by Mr. P. Mawdsley: 'That in the opinion of this meeting it is desirable that a Photographic Club be formed.' This was carried unanimously. Proposed by Mr. E. W. Foxlee, and seconded by Mr. Cowan: 'That no one be eligible for membership unless he be a member of a photographic society.' An amendment was proposed by Mr. Payne Jennings, and seconded by Mr. Lowrie: 'That though it would be advisable that the members of the club should be also members of some photographic society, this

should not be imperative.' A further amendment was proposed by Mr. W. B. Bolton, and seconded by Mr. T. J. Pearsall: 'That the membership be open to all.' Upon a show of hands the original motion was carried. It was proposed by Mr. Foxlee, and seconded by Mr. Mawdsley: 'That a committee be formed consisting of nine members, five to form a quorum, to carry out the preliminary arrangements.' The following gentlemen were elected to form a committee:—Messrs. A. L. Henderson, W. B. Bolton, A. Cowan, Payne Jennings, A. Brittlebank, E. W. Foxlee, E. Dunmore, P. Mawdsley, and C. G. Cutchey. It was proposed by Mr. Bolton, and seconded by Mr. Cowan: 'That the resolutions passed at this meeting be subject to such modification as the committee may deem desirable, such modification to be submitted to a general meeting.'

"The Committee thus formed have met every week since; the first meeting having been on the 9th of October, when Mr. Cutchey was asked to act as secretary *pro tem.*, and numerous letters have been written to photographers and others.

"The original idea was to take a suite of rooms and establish a club, to be open at all times to its members. This idea, however, at present, your committee feels to be impracticable; but doubts not that in time this Club (if established) will be able to do so; but at present it must be content with a room for the purpose of meeting once a week, say on Wednesday evening at 7 o'clock, one hour to be devoted to formal business, and the remainder of the evening to social intercourse, the chairman to be changed each evening, and then only to take the chair for the time of the formal discussion. It is also hoped that a library may be formed for the use of the members, and that any novelty in connection with photography will find a place in what may be termed a museum; in short, that the Club may be, so to speak, a home for photographers. These ideas may seem Utopian, and in the far distance, yet without some such beginning as it is to be hoped will be made tonight would still be in the womb of time.

"The committee now place before you the following suggestions.

"That a club be formed to be called the 'Photographic Club.'

"That the subscription be one guinea per annum, and an entrance fee of one guinea in addition; this fee, however, not to be paid by the first one hundred joining.

"That all residing and carrying on business at a distance of fifty miles from London be considered as country members, and pay a subscription of half-a-guinea only in addition to the entrance fee.

"In order to test the feeling of photographers generally, an informal meeting was held on the 15th of October, when the resolution as to members being of necessity members of a photographic society was fully considered and discussed, and the feeling of the meeting was strongly in favour of the withdrawal of this restriction, and the Club being thrown open to all interested in photography, whether professional, amateur, or manufacturer; and your committee therefore calls your special attention to this resolution, and asks your instructions thereon.

"The committee felt that a very strong interest in the movement was taken by Messrs. Cobb, Warnerke, and York, and they therefore, in the exercise of the usual powers claimed by all preliminary committees, asked those gentlemen to join them in their labours.

"The committee have also drafted a code of rules for the guidance of the proposed club, and which rules they now submit to you, either for your consideration and discussion, or for the consideration of the committee you may to-night appoint."

It was then proposed by Mr. Payne Jennings, and seconded by Mr. A. L. Henderson, that a Club be formed, to be called "The Photographic Club."

The meeting then discussed and adopted the following proposed rules submitted by the preliminary committee, after which the following gentlemen were elected as officers for the ensuing year:—

Trustees—Mr. A. L. Henderson and Mr. Frederick York.

Treasurer—Mr. E. Dunmore.

Committee—Messrs. W. Bedford, Payne Jennings, A. Cowan, L. Warnerke, and P. Mawdsley.

Hon. Sec.—C. G. Cutchey.

GLASGOW PHOTOGRAPHIC ASSOCIATION.

A MEETING of this Society was held in the Religious Institution Rooms, Buchanan Street, on Thursday evening, the 6th inst., Mr. A. ROBERTSON in the chair. The minutes of the previous meeting having been read and approved of,

It was moved by Mr. T. GILFILLAN, and seconded by Mr. URIE, that the meetings be held fortnightly instead of monthly—Thursday being agreed upon as the most suitable evening.

Mr. GILFILLAN asked what had been done by the committee appointed to look out for a presentation picture, and as nothing had been done a new committee was appointed, viz.:—Messrs. J. J. Long, J. Urie, A. Robertson, and T. Gilfillan, to bring up a report at next meeting.

The following gentlemen were duly elected members:—Messrs. W. C. Hume, W. Preston, J. R. Glenzie, W. McGhie, J. Bourke, R. McColl, and Dr. Bell.

Mr. JOHN URIE, Sen., then read a paper entitled "The Mishaps of a Photographic Tour" (see page 554).

Messrs. BELL, McLELLAN, and GILFILLAN expressed their thanks to Mr. Urie for his amusing paper.

Mr. JAMES MCGHIE (Secretary) said that it was with feelings of pleasure he rose, at the Chairman's request, to thank Mr. Urie for the paper just read, which, to say the least of it, had been of a highly amusing character. As a Society they had often been indebted to Mr. Urie for voluntarily supplying them with an evening's instructive amusement, and he (Mr. McGhie) could personally thank that gentleman on that occasion for the readiness with which he complied with the request for a paper. Again thanking Mr. Urie for his paper, and hoping before long to have the pleasure of another, he (Mr. McGhie), before sitting down, requested to be allowed to add that he would use his utmost endeavour, as their Secretary, to do all in his power to promote the Society's welfare and interests, making their evenings as enjoyable and instructive as possible.

The CHAIRMAN expressed his opinion that the paper read by Mr. Urie was of a very humorous character, and as he had travelled over most of the ground gone over by Mr. Urie he could vouch for the accuracy of his descriptions. Mr. Urie had made reference to fishing as an art, and the pastime of celebrated artists. He (the Chairman) was of opinion that it was not so much of an art in itself as requiring a good deal of art to capture the funny tribe.

A vote of thanks to the Chairman brought the meeting to a close.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE twentieth annual meeting of this Society was held in 5, St. Andrew Square, on Wednesday evening, 5th Nov., 1879. Dr. J. A. SIDEX, the senior vice-president, occupied the chair.

The minutes of the last general and ordinary meetings were read and signed, after which five new members were unanimously elected, viz.:—Messrs. A. Clark, C.E.; Walter Forbes, M.D.; William Campbell; N. P. Spears, and William Ranken.

The following report was read by the Honorary Secretary:—

"The Council, in presenting the Twentieth Annual Report, have pleasure in congratulating the members on the Society's continued prosperity. Its members have been steadily increasing; and the fact that, during the last ten years, the membership has been nearly doubled, is ample evidence of its value and popularity.

"During the past year the Society has lost nine members by death, twenty-seven by resignation, and six by removal, total forty-two; whilst forty-seven new members have been enrolled—three of these being re-entries, and one an honorary member. The total number on the roll at present is three hundred and sixty-four.

"Twenty-five meetings have been held during the past Session—nine ordinary, one out-door, two popular, ten council and committee, one conversazione, the annual excursion, and the annual dinner.

"The ordinary meetings have been well attended, and the subjects brought under consideration have been of a practical and instructive character. The members present have invariably taken an active part in the discussions.

"The 'Popular' meetings have been popular in the widest sense of that term. They continue to be a pleasing element in the Society's operations, and it is believed that by their instrumentality the usefulness of the Society, and the increase of its membership, are to some extent due.

"Only one out-door meeting was held during the session—the place selected was 'Dalkeith Palace and Grounds.' (Comparatively little interest is taken in this enjoyable branch of the Society's work, hence this one meeting only).

"The 'Conversazione,' held on the 4th June, was undoubtedly one of the features of the past session; the apparatus

pictures, and miscellaneous articles exhibited were of an interesting and curious character, illustrating in a very striking manner the progress of photographic art from its earliest history down to the present day. Short addresses were given on this occasion by Messrs. Morton, Bow, Davies, Turnbull, and others.

"The annual excursion took place on the 24th July, and, as usual, was largely taken advantage of. It proved quite as successful as any previously got up by the Society. Almond Dell was the place selected; over one hundred tickets were sold.

"The following papers were read before the Society during the Session:—'On Art in Landscapes,' by Mr. William Neilson; 'Notes on the use of Oxygen in connection with Magic Lanterns,' illustrated by Chadwick's Safety Oxygen Generator, by Mr. J. M. Turbull; 'On the Whisk and Water Process, a northern development of Mr. James Mudd's Gin and Water Process,' by Mr. Robert Murray, C.E.; 'The Spirit of the Journals,' by Mr. W. H. Davies; 'A New Automatic Syphon,' with a working model, described and constructed by the inventor, Dr. William Taylor; 'Notes on the use of Artificial Light in Photography,' by Dr. Drinkwater, F.C.S., &c.; 'On the Selection of Subjects from Nature suited for Photography,' by Dr. Alexander Hunter; 'On the Theory of Colour Sensation,' by Mr. Robert Bow, C.E.; On Failures in Carbon Printing,' by Mr. W. H. Davies.

"The following were also exhibited and explained at the ordinary meetings:—'Specimens of Dry-Plate Landscape Work,' by Mr. Robert Murray, C.E.; 'Mr. J. Thomson's Work on Cyprus, with a series of Rosetti's Views,' by Mr. W. H. Davies; 'A Series of Chinese Photographs,' by Mr. James Crighton; 'An Instantaneous Shutter,' by Mr. F. Brigleman; 'A Dark Slide made from Paper,' by Mr. J. M. Turnbull, &c.

"The thanks of the Society were given to the Autotype Company, and the Platinotype Company, for their interesting contributions to the Society's album; also to Mr. J. H. Fitzgibbon, editor of the *St. Louis Practical Photographer*, for examples of American Cabinet Portraits.

"It was resolved at an early period of the Session, to give a 'Presentation Print' to each member. The committee entrusted with this matter experienced considerable difficulty in finding and selecting a suitable subject; unexpected delay was the result. On application to Mr. George Bruce, of Dunee, that gentleman, in the most generous way, placed his best pictures at the Society's disposal; from these the committee selected, and the council approved of, one bearing the title 'Biding his Time.' This is now being produced in carbon by the Autotype Company, and copies will soon be distributed.

"In conclusion, it will be found from the Treasurer's Report that the financial position of the Society is healthy and satisfactory."

The Honorary Treasurer submitted his financial statement, a condensed report of which will appear in our next.

The reports were adopted, and ordered to be printed with the billet calling the December Meeting.

Office-bearers were next elected for the ensuing year.

President.—*Mr. John Lessels.

Senior Vice-President.—Lieut.-Colonel Herne.

Junior Vice-President.—Mr. James Henderson.

Honorary Secretary.—*Mr. Malcolm G. Dobbie.

Hon. Corresponding Secretary.—*Mr. W. T. Bashford.

Hon. Treasurer.—Mr. Hugh Pillans.

Hon. Lecturer.—*Mr. W. H. Davies.

Hon. Auditor.—*Mr. Alexander T. Niven, C.A.

Members of Council:—Mr. A. Craig-Christie, F.L.S., Mr. James Small, Mr. W. Douglas, Mr. F. Brigleman, Mr. G. G. Mitchell, Mr. Thomas Pringle, and Mr. Alexander Mathison.

A group picture of the Members of Council for the past year taken by Mr. Moffat, was passed round the table, and greatly admired. Mr. Milliken contributed two photographs of the Kirkcaldy Exhibition to the Society's album, and received a vote of thanks.

Votes of thanks were given to the retiring office-bearers and to the Chairman, after which the meeting adjourned.

EDINBURGH PHOTOGRAPHIC SOCIETY.

THE Annual Dinner of this Society took place in Young's Hotel, on Friday, the 7th November. Mr. LESSELS, President of the Society, occupied the chair, and was supported by Mr. Henderson (Junior Vice-President) and Dr. Sidey.

* Those with an asterisk attached to their names were re-elected.

Mr. M. G. DOBBIE, the Honorary Secretary, acted as *croupier*, and was supported by Mr. W. T. Bashford and Dr. Alexander Hunter.

The usual round of toasts, with short speeches and music, occupied the evening, which was the most enjoyable that has been held for many years.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

A COUNCIL MEETING of this Society was held on the 13th inst., at 12, York Place, Portman Square, ARTHUR FARRE, Esq., M.D., F.R.S., in the chair.

The minutes of the last meeting having been read and confirmed, A. C. Swinton, Esq., and Lieut.-Col. J. H. Biggs were elected members.

The Secretary then laid before the meeting the prizes which had been awarded at the annual meeting:—A large silver goblet for R. O. Milne, Esq.; a silver goblet each for W. S. Hobson and R. Murray, Esqs.; an oil painting in frame each for J. W. Leigh, J. W. Richardson, G. G. B. Creswell, R. Loventhorp, and E. Swinbourne Esqs.; an album each, elegantly bound, for the Marchioness of Anglesy, T. R. Shervinton, Esq., and Rev. W. Handcock; a graphoscope each for F. Beasley, R. O. Milne, and T. Brownrigg, Esqs.

A vote of thanks to the Chairman, on being proposed by Mr. Glaisher, and seconded by Capt. Lewis, was passed by the meeting.

A. J. McLEISH, Hon. Sec.

N.B.—The prizes will be on view at 12, York Place, Portman Square, during the next week.

Talk in the Studio.

RAPID GELATINE PLATES.—We have been favoured by Mr. Werge with a print from one of Swan's rapid plates, taken by Mr. C. D. Davis, the exposure being instantaneous, as secured by a Weaver drop shutter. The subject is a pigeon, which had just been preening herself; one of her white feathers, disengaged, is just floating away, and is secured with perfect definition. The feather is in flight, if the bird is not.

RAILWAY ROBBERY.—At the Cambridge Police Court yesterday, Henry Allford, photographer, of Aston, Birmingham, was brought up on remand, charged with stealing on the 8th inst., from the Great Northern Railway Station platform at Cambridge, a portmanteau containing lady's wearing apparel and jewelry to the value of £100, the property of Mrs. Skelton Cole, of Broomhill House, Sheffield. The prisoner pleaded "Guilty," and was sentenced to three months' imprisonment with hard labour.

To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future.

ZENO.—We are not, unfortunately, familiar with the *Football Times*, the *Bicycling Times*, or *The Theatre*, and hence we are not familiar with the portraits they contain. But we have an impression that the portraits in the last mentioned journal are produced by the Woodbury Printing Process. These are printed by the Woodbury Printing Company, 157, Great Portland Street, London, W., of whom you may obtain all particulars as to number and price. The price is very reasonable, but we cannot give you the figures.

R. F.—As a rule, about three minutes we have found a desirable time to float albumenized paper on the silver bath, but there is no fixed rule. It requires longer in winter than summer. Highly albumenized and stiff paper requires longer than thin soft paper. If the silver bath is weak, longer time is required; but judgment and experience are required in deciding. After the paper has hung a few minutes, it may, as a rule, be blotted off without injury. The paper should not be placed in contact with the negative whilst actually wet or even moist, but it should not be absolutely bone dry. Always print until the face is just a little darker than you desire it in the finished picture.

J. B. E.—The Artotype process is not, so far as we know, worked in this country; not, at least, under that name. It is a photo-collotypic process. There are various modifications of it, some of which are worked in this country; but not, we think, to the extent of which it is worth. It is most allied to photography in character. It has no resemblance to silver printing.

M. B. D.—It is difficult to say to what extent carbon is superseding silver printing. We did not make any comparative estimate of the comparative proportions of silver and carbon hung in the Exhibition, but, so far as our memory serves us, the carbons were vastly in the minority.

A BEGINNER.—Unless you have had some little experience in the use of distemper colours, you can scarcely hope to make a perfect background at the first trial; but with care you may succeed. Here are some instructions from a practical man. Stretch unbleached calico on your frame, and when neatly tacked on, proceed to colour it thus: Get 4 pounds of dry ground yellow ochre from a dry-salter, colourman, or ironmonger; 2 ounces of good glue, and 4 ounces of whiting. Soak the glue in cold water over-night, dissolve it in hot water, and pour it over the yellow ochre and whiting in a large basin; when well dissolved, put it on smooth and even with a whitewash brush, beginning at the top and working gradually down, taking care to use a light, even touch with the end of the bristles of the brush only. In this particular many fail in trying to get an even tint with distemper colour. Another thing to avoid is using the colour too thick; the consequence of this is, the background will be smeary. The proportion I have given suits my own light, but if the background is wanted to be darker, omit the whiting; if darker still, add a little finely-ground burnt umber. Yellow ochre is a nice colour to focus against, and if, by any chance, the background gets stained, it can be easily renewed, the next time of painting not requiring more than half the above proportions. Should any mishap occur, the colour can be easily renewed for a few pence; and if a landscape background is wanted, the addition of burnt umber and whiting with yellow ochre will supply any variety of tint required.

TYRO.—The "golden syrup" process of Mr. H. P. Robinson was a method of dispensing with the use of hypo whilst engaged in landscape photography. Hypo is an abomination in a field box, and Mr. Robinson used to leave the fixing of his negatives until he got home—developing, however, on the spot, and at the time of taking the view. His instructions were as follows:—When the plate has been exposed, it must be developed and intensified with iron; that is, when the developer has done its work, silver solution should be added to it, or, if too muddy, a fresh portion taken, to which silver has been added, and applied until the right intensity is gained; after which, instead of washing it, the following solution is poured over the plate, and the negative is placed in the box:—

Golden syrup	...	...	...	...	10 ounces
Water	...	...	...	...	10 "
Alcohol	...	...	...	...	6 drachms

Subsequently the syrup was washed off, and the negative was fixed and finished as usual.

PRINTER.—Borax was the agent used for securing solution of the resin in the shellac process.

BUNGLER.—Heat must not be used to hasten the drying of gelatin negatives. To secure great vigour, increase the proportion of pyrogallie acid. Excess of ammonia will induce risk of fog.

J. A. SYKES.—In our next.

G. THOMPSON.—In our next.

E. PASSINGHAM.—Many thanks.

MANCHESTER PROCEEDINGS.—Received too late for this week. In our next.

F. H.—You should have sent us an example. Do so now, and we can doubtless help you. A front light is not good.

POST TENEBRAS LUX.—We fear that the paraffin lamp would scarcely give satisfactory results. A good light is requisite. We have no means of forming a certain judgment. We should think the truth about half way between the two estimates.

HYPO.—Probably turbid collodion. Try a new sample.

A YOUNG PHOTO ARTIST.—Too late for full answer this week. In our next.

J. M.—The offices of the Photographers' Benevolent Association are at 160A, Aldersgate Street, E.C.

Several correspondents in our next.

PHOTOGRAPHS REGISTERED.

Mr. WALKER, Cirencester,
Photograph of St. John's Church, Cirencester,
Mr. W. HICCOX, Crediton, Devon,
Photograph of Col. R. H. Buller.

The Photographic News, November 28, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE HYGIENE OF PHOTOGRAPHY.

THE *British Medical Journal* makes the strange statement that the hygiene of photography "has been for the first time studied with care by Dr. Zanetti." We have no desire, of course, to deprecate any study which Dr. Zanetti has made on the subject, but, on the contrary, are only too happy to learn that the aspect of photography from a sanitary point of view has received earnest consideration at his hands; but he is by no means the first who has been good enough to look after our health. Our readers will remember that more than five years ago Dr. Napias, the medical officer of the French Photographic Bénévolent Society, wrote some very valuable "hints" on the subject, which were published in these columns and afterwards collected in the form of a pamphlet.* Moreover in Vienna, a study has been made of the Hygiene of Photography, and much valuable information on the subject published in Dr. Hornig's *Jahrbuch*, which we have had the pleasure to place before our readers. According to the *British Medical Journal*, Dr. Zanetti's opinion seems to coincide with that of Dr. Henri Napias. The principal defect in the calling of the photographer that needs medical attention is his sojourn in the dark-room among vapours of ether and alcohol. The photographer, it is true, has to do with noxious substances, some of which, like cyanide of potassium and pyrogallie acid, are of a highly dangerous character, but of these we can always beware. Not so with the fumes of alcohol and ether. If he practises the wet process—and there are very few who can get on without it—he must perforce inhale these vapours; and if the laboratory is warm and ill-ventilated, a long sojourn therein is very likely to bring with it sickness. Since photographers have taken to fit up their dark-rooms so that gelatine plates may also be developed therein, caution has indeed become necessary, for with these films the stoppage of every crack and cranny is an imperative necessity. If, then, photographers continue to coat collodion plates in rooms made tight for the gelatine process, we may expect to hear, according to Dr. Zanetti, of more sickness still in their ranks. Dr. Zanetti says that alcohol and ether vapours are heavier than atmospheric air (this is true as regards alcohol vapour, which may be set down at 1.6, but the specific gravity of ether vapour is only 0.72), and therefore they do not rise of their own accord, but hang about the operator. Only a thorough draught could dissipate such vapour, and photographers, even if they were willing to put up with the inconvenience of working in a current of air, would not like it on account of the particles which would obviously be moving about. Some amelioration of the defect might be made, thinks Dr. Zanetti, by having recourse to tubes in the lower part of the laboratory which would lead off the fumes, but better still would be a roomy laboratory in a cool and darker portion of the studio, where little necessity exists for cutting off the light, and therefore the air. Many photographers make the mistake of having their dark-rooms leading straight from the glass room, and hence, on the mere opening of the laboratory door, a stream of daylight rushes in: not only this, but the temperature of the dark-room is thereby raised, and when we bear in mind the low boiling points both of ether and alcohol, it stands to reason that a few degrees of heat makes very much difference. Ether boils at 96° Fah. (we often get this heat in midsummer), and alcohol at 173° Fah., so that you cannot be surprised at the copious vapours these liquids sometimes emit. A man subjected to the influence of such vapours for any length of time is in much the same condition as one who has been indulging in alcoholic liquors, and hence Dr. Zanetti tells us, as Dr. Napias has already

dere, that photographers should be particularly abstemious in respect to spirituous beverages. Dr. Zanetti says that those who breathe such vapours suffer the following morbid symptoms. First of all, a sense of oppression is complained of, with painful constriction and itching in the throat, then nausea, giddiness, and general uneasiness supervene. Ordinarily, these symptoms do not last, and the workmen end by becoming acclimatised. It seems, however, that they only become so after having already contracted the germs of affections which sooner or later show themselves in a serious form if they continue to live in so deleterious an atmosphere. We might cite examples of photographic operators, says Dr. Zanetti, being obliged to renounce their profession, or to continue it in a new way, in order to escape from the injurious effect, especially of the vapour of ether and alcohol, which is the great danger to health without proper precautions. The beverages advisable to use in order to avoid the inconveniences of the prolonged etherization are lemonade, or natural or artificial mineral waters. To combat the loss of sleep, it is sometimes necessary to employ opiates associated, according to the advice of Dr. Zanetti, with aconite or antimony. He says he has not had any success with other hypnotics. For disorders of the stomach—such as loss of appetite, nausea, and vomiting—a bitter drink is recommended, consisting of a pint of water, two ounces of dry coffee, with three drachms each of quinine and quassia bark, the mixture to be left for some days, and filtered; and a wine-glass of it to be taken every morning. For the intense headaches frequent amongst photographers, some relief is obtained by drinking a glass of sugar-water to which a few drops of vinegar or sal-volatile are added. The most certain remedy, however, is the employment of methods which exclude the injurious substances alcohol and ether. These, according to the *British Medical Journal*, are the principal points in Dr. Zanetti's memoir, and they agree most curiously, as we said before, with the opinions expressed by Dr. Napias.

HOLIDAY PHOTOGRAPHY.

BY C. PEARSON, JUN.*

I THINK that at most of our meetings here we have our attention too much directed to one aspect of our art-science to the comparative neglect of the other. We hear many descriptions of processes, see plenty of very ingenious apparatus, and a very good show of results, consisting of prints brought for exhibition by the more considerate of our members. We also hear a great deal about the technical as well as the mechanical side of the science of photography, both of which are very useful and necessary; but we do not hear so much of the actual working out of the art in the field or otherwise. We here see results, we see also, perhaps, the apparatus used to procure those results; but of the circumstances under which they were produced, the pains taken, the various devices resorted to in order to obtain them, and perhaps, I might say, the interesting associations connected with them, we hear nothing or next to nothing. It would, I am sure, make these meetings more interesting and instructive if we did hear occasionally—and especially from our older and more experienced friends—about the practical working of their favourite processes and apparatus.

After some of our members had been over to Harwarden to photograph in that beautiful park, we did hear a little about the work done there, and if it were only recounting the difficulties met with, it was interesting. You remember we heard how this irrepressible photographer would go and plant himself and camera directly in front, or at least in the field of view, of some earlier arrival already at work on a good subject; how another, agreeing to do anything pointed out by an artist, shook his head in disgust at the first bit pointed out as being quite unworthy of his plates, much less an artist's palette; and of another who made it a point to expose only on subjects that others had found and taken,

* "Sanitary Hints to Photographers," by Dr. Henri Napias. (London, Piper and Carter. Price Twopence.)

* Read before the Manchester Photographic Society.

Surely all our meetings, with the exhibiting and discussion of matters photographic, are with a view to obtaining the intended practical results; why, then, should we hear so little of one side and so much of the other? Let it be my excuse for reading this paper to hear a little of the other side, if only for the sake of variety.

It appears to me that amateur photographers—and it is chiefly to amateurs I address these remarks—may be divided into two distinct classes: those who practise photography as much for the sake of the manipulatory operations as the getting of photographs, as a hobby of itself, and those who only use it as a means to an end, and that end to be the obtaining transcripts of scenes and objects more readily and faithfully than can be obtained by the pencil or brush, and who care not by what means that required end be obtained so long as the result is satisfactory. Among the latter, rightly or wrongly, I am content to class myself. As my paper, however, is more immediately concerned with holiday photography, I will try to confine myself to that.

Once a year, at least, most of us who are confined to business are able to get a week or two from home, generally in the summer. Not many who have the chance of getting a change of air and scene neglect to avail themselves of such an opportunity of brushing away the "dust and cobwebs," as it has been described, of a year's work in town. It is then that to the fortunate possessor of a camera the time for action commences; and, if he be above the ordinary Southport or Blackpool type of holiday maker, he will be anxiously on the look-out for some field where more novelty and excitement may be found. I say "excitement"—not such as is produced or obtained by promenading the day long on some fashionable parade, the highest ambition being to be seen as well as to see; not the excitement of such artificial pleasure, but the enthusiasm and enjoyment produced by contemplating the grand and diversified scenes of nature, whether by land or by sea—nature which is the more beautiful the less it is improved by man. It is astonishing to those who look for it what a complete change of scene may be found almost at our doors. Within twelve miles from home I could show you mountain and river scenery for wildness and picturesqueness equal to that of Wales, but, of course, on a smaller scale.

For the last three years it has been my fortune to pass most, or part, of my summer holidays at sea—of all places, some may say, the least desirable, especially when one intends to make the camera a companion. It has always been my study to keep my apparatus as light and compact as possible, as otherwise pleasure is out of the question, and if it were to become a toil it would soon be abandoned. Accordingly I limit myself to 5 by 4 and 6½ by 3½ (stereo.) plates. The camera, with three double slides and extra front, is packed in a small, sling leather case, which, when filled, weighs six pounds. Into another similar case are fitted two double stereo. slides, a base-board, portrait lens and instantaneous cap, focussing-cloth, &c., weighing about five pounds. This case I generally get the friend I am with to throw over his shoulder. With a light folding tripod, two pounds in weight, I am complete for a good walk, climb, or whatever may be necessary, without feeling encumbered. Of course when from home for a time I carry the usual stock boxes of plates in my luggage. I may as well mention at once that as it is the results I aim at, obtained in the readiest and most reliable way possible, I usually purchase a stock of gelatine plates ready prepared, believing that at the present low prices of such plates it is the truest economy to do so, especially as they can now be had so thoroughly reliable. A few of the old-fashioned collodio-albumen plates, added for the sake of architectural and town views, complete my stock.

Thus equipped, a fine summer's afternoon in July—one of the very few we have had this year—found myself and friend on one of the quays of the Liverpool docks looking out for the steamer which was to convey us to our destination—Limerick. It was intended that it should have sailed

at three o'clock that afternoon; but, owing to the cargo being incomplete, they lost the tide, and had to wait till three o'clock next morning. As we had the afternoon on our hands the camera was at once unpacked and mounted for action; for I always believe something can be picked up on a fine day wherever you may be.

We took care first to get into the confidence of the captain and steward, the former being soon put right by my promising to take him just as he liked. In his company we took a stroll by the docks on to the fine sea wall, armed with mounted camera and sundry other apparatus. We were soon surrounded by a small crowd of the usual loungers who are always to be found in such places, and who seem to pass the whole day leaning over posts and walls, looking out to sea or talking with their friends.

After putting my portrait lens in the camera and the flap cap on it, I "spotted" two or three men adjacent who were thus engaged; so, quickly focussing by some object at about the same distance off, but in another direction, inserting the slide and withdrawing the shutter, I quickly turned the camera on the tripod screw in the direction of the group, flapped the shutter and then turned the camera round again, even before my friend knew it was done. The result was fair, though the focussing was not quite accurate enough. Next I exposed, instantaneously, a plate on a small vessel and a sailing boat passing at the time, with a fairly successful result.

After taking a few more views we returned to the vessel to look out for some place to convert into a dark room to change plates in. The captain volunteered to lend his deck cabin when he was not using it, and by covering the windows with several sheets of orange paper a capital dark room was obtained. When I could not use it, however, I had to do the best I could in my own cabin below by pinning paper over the portholes, and taking care to see that all apertures were carefully covered. As naked lights to use in a dark lantern are prohibited at night on shipboard I had to be careful to do all necessary changing by daylight.

On turning out next morning we were off Llandudno, having sailed in the night; it was, however, too hazy to see distinctly until we came to Anglesea, where we were much nearer land. As we rounded Holyhead and the Stack Light-houses the camera was brought into action, and two or three successful instantaneous photographs obtained as we passed.

It is a very exciting time just as the vessel is coming up with a headland; there are so many little matters to attend to. You are first anxious to focus right, which is generally difficult, as the distance is continually altering, and has to be allowed for; then to get the slide in right and withdraw the shutter, perhaps only to find at the critical moment that the flap cap is open. It is also a source of anxiety to know when the best point of view is to be obtained, as there is seldom time to take a second.

On leaving land, and making across the "open," plenty of amusement and scope for the camera can be obtained. If there are other passengers aboard they soon begin to suggest the desirability of their figuring on some of your plates, while you have to use all your arts to show the impracticability of such a course. I have taken photographs on the deck of a vessel when she has been rolling so much as to necessitate a person holding each leg of the tripod down to the deck, yet in the result there was no appearance of the vessel having moved any more than if it had been on land.

Even the vibration caused by the screw, which sometimes makes the vessel tremble very much, seems to have no ill effect, because both the lens, the camera, and the deck all move exactly together.

On this voyage, with the exception of a few steerage passengers and four or five stowaways who turned up in the morning, we were the only passengers, so had not much work in this way, though the sailors were glad enough to sit when they had a chance. The next morning we were going along the S.W. coast of Ireland. The scenery was very grand about Cape Clear, Dingle Bay, and Valentia, though rather

too hazy and distant for the camera, consequently the pencil had to supply its place. On waking the following morning we found that we were at anchor in a quiet corner just inside the fine estuary of the Shannon.

While patiently waiting for the breakfast bell an interesting relic of past times, though rather common here, came alongside—a canvas canoe or coracle, containing two men who had a few crabs and lobsters to sell. A lighter or frailer craft could scarcely be imagined. When both men pulled, it fairly skimmed over the water, and it took me all my time to get a plate ready and expose it before they were some distance off. A few plates were exposed as we were going up the river—one on an encampment of soldiers on the river bank.

(To be continued)

AN EXPOSING VALVE FOR RAPID PLATES.

BY M. NOTON.*

THE extraordinary sensitiveness of gelatino-bromide plates has made it desirable that a good mechanical means should be had for exposing them in the camera. Lately several designs, varying in arrangement, have been published and constructed for that purpose. There is still room for more, and another design, to be one amongst the others, is offered to you. It differs from all the others, as it opens and closes at the centre line of the lens or lenses, on the principle, partly, of the adjustable stop I published in No. 48, for 21st November, 1856, of the *Journal of the Photographic Society*.

In the *British Journal* for 8th August last, H. L. Bundy says that "a perfect shutter must open from the centre," &c. The design now before you does this, the opening being square, "as no other shape will retain its form under varying sizes. In the *British Journal*, No. 181, for January 1, 1863, you will find a delineation of an instantaneous shutter, by M. Tissot, for a stereo camera. It has square openings from the centre. There is an inconvenience in a double "shutter," as it stops any alteration in the distance between the lenses. The design before you is for one lens. The foundation plate carrying the moving parts may be of wood or metal; in this case it is supposed to be of wood, all the other parts being metal.

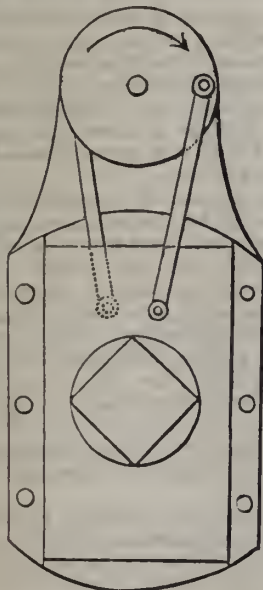


Fig. 1.

Fig. 1 shows the valve full open, or at half-stroke, for

* Read before the Manchester Photographic Society.

the moment. Fig. 2 is shown as having just completed an

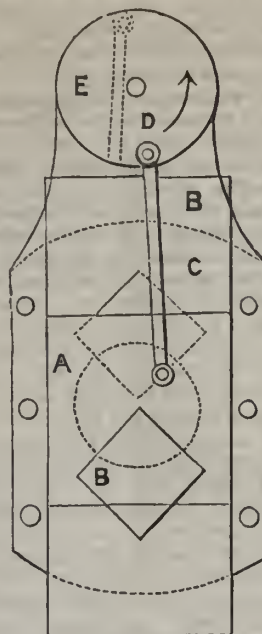


Fig. 2.

exposure, and is now shut. Fig. 3 is a side view of fig. 2, with the addition of the front plate carrying the sun-shade or flap shutter. This shutter should be closed immediately

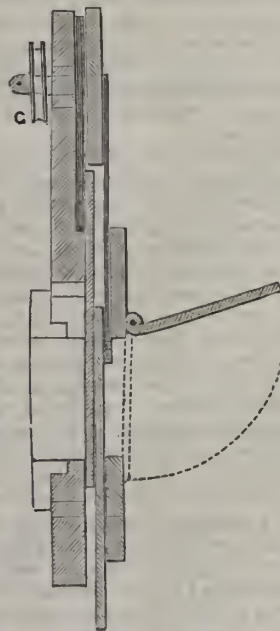


Fig. 3.

after an exposure has been made, to ensure against any accidental opening of the valve, before the dark slide holding the sensitive plate has been closed.

The sliding plates A and B are each separately connected by the links C and D to the circular disc or crank plate E—one at the front and the other at the back. A short axis F, upon which the disc E is fixed, and passing through the base-plate, has a pulley, G, at the other end; this pulley is put in motion by an elastic cord or spiral spring, restrained by a trigger catch—not shown, as they

are easily understood. Half a revolution of the disc gives to each of the sliding plates the stroke required for opening and then closing.

The principal moving parts being in duplicate, and moving in opposite directions, balance each other. The timing of the exposure may be adjusted by varying the tension of the elastic cord or spiral spring. Another way would be by putting in a Waterhouse stop at the back of the valve.

During the last twenty years instantaneous shutters have made very little progress—simply because there were no instantaneous plates to be had. Gelatine has altered this, and now a rapid exposé is required to meet the rapid plates; hence the various contrivances cropping up. My impression is that this exposé is the best out, and as it is free to all they may be made *ad libitum*.

"LOOKING BACK."

BY AN OPERATOR.

CHAPTER XI. BOHEMIANS.

"*Salute*: I think thou knowest every ruffian in Madrid!

Cesar: You do me honour—and 'tis one that I deserve. There's not a vagabond of all, who's not my intimate acquaintance."

VICTOR HUGO.

I HAD now done with the quiet business, but it had not done with me. That may sound strange, but I shall make plain my meaning presently. I had shaken off the disease, but it had left what old world people would term its "dregs." I had been a year altogether struggling in that social man-trap for bread, for bare life; and during that period I had never been enabled to add to my wardrobe—quite the contrary—so that I found myself in a position very expressively defined by the single slang word "seedy." Yes; there could be no doubt about it, I was seedy—I was shabby, and down at heel; brush and scrub as I would, I could not get back the brightness to the shoes, or the pile to the coat that had looked so well twelve months since. Supplement this with the two facts that I had used up the best of my specimens in the show cases of the little business, and that the fogs of November were just commencing, and you will perceive what an undesirable position I had got myself into; you will likewise perceive how it was that the quiet business had not finished with me.

"Sweet are the uses of adversity," wrote the great dramatist; but in my case I cannot discern much sweetness in it, unless it be that my old woman and I seemed to be a bit fonder of one another than in the days of our prosperity, thus giving the lie to the old saying that when poverty comes in at the door, love flies out of the window. At the risk of being termed severely just and bitterly truthful, I must tell you one grain of worldly wisdom that I learned in those days of bread without butter, and that was, that it was not only counted a sin to be poor, but a downright crime, and that you might as lief have the smallpox or plague as an empty purse when you try to make friends.

Adversity makes you acquainted with strange companions. That is true enough, as I shall presently inform you how, through my poverty, I became thoroughly acquainted with the wandering Bohemians of our profession. I believe every trade or profession has its rear-guard of Bohemians—roving vagabonds that love free air and sunshine, whose whole existence is made up in change—now in the sunshine, now in the shade—warm in their tatters, rich in their poverty—one day revelling in a windfall of luck, and the next swaggering *a la Jingle* with a whole fathoming or a brass button for their sole earthly treasure. Other businesses have their vaunderers, as I said before, but I do not think you will find among them all such a jolly, light-hearted rogue as the thorough-paced photographic Bohemian. He puts the others completely in the shade; he is as full of self-conceit as a third-rate actor; he is an artist,

and will talk you stupid about light and shade; will tell you the merits and demerits of our first-class houses; will pass his opinion on the Rembrandts at the last exhibition, and he will take a ferrotype of you for sixpence! You will stumble upon him everywhere—in the country lanes—in the garden of some well known hotel—on the sands among the bathers—or on the racecourse with the book-makers. He is full of impudent wit—wit that verges on trickery. He will take a glass picture of John Hodge, put it carefully in a case, and, while pocketing the half-crown, give particular instructions that the case has not to be opened for three or four hours, as the picture will fade if it gets the light. That case burns Hodge's hands—he cannot keep it in his pocket—he is for ever fiddling with it, and at length he can resist no longer; he opens the case to find a dim plate without the slightest vestige of a figure upon it. Hodge swears, and returns to our Bohemian, breathing warlike threats. But our artist is waiting for him—he knew how it would be, and listens to Hodge with a hurt and offended air.

"Good Gad, sir! what did I tell you?" he cries, when Hodge has finished. "Did I not tell you that if you gave it the light before it got quite dry it would *spile* it? And here you 'ave been and done it! But as you are a decent sort of chap, I'll tell ye what I'll do! For another shilling I'll do ye a regular screamer."

Thus he obtains three-and-six for his picture.

When I write of these Bohemians I do not include those poor ragged wretches who wander the country, levying small contributions from benevolent photographers, awakening their charity by long rigmaroles about their troubles. These spiritless things are the beggars of the profession, and, a hundred to one, were never worth salt to their porridge. Your true Bohemian would scorn to beg; the spirit of adventure in his nature would tempt him to steal his dinner rather than beg it; but it is rarely he ever comes to that, for his ready brain is almost always sure to devise some means to turn the nimble shillings. London, or, as he terms it, "Smoke," is his head-quarters; here he lies fallow during the winter months, doing odd jobs, buying and selling, or takes up a stand at some of the suburban pubs., or otherwise passing the time until the spring meetings come round, when he once more lays in his small stock of glasses and chemicals, and commences his summer roamings.

One Friday I observed an advertisement in the NEWS for a good operator—apply at a certain number in the City Road; it likewise intimated Sunday work. A year before I would have scorned such a place; but now things were changed, and bread had to be won; so breathing a silent prayer that I might be the first to apply, I started off as fast as I could walk. Quick as I was, I found no less than three before me, and as I came away I met a fourth going in. He was rather what you might call a handsome fellow—tall, with a ruddy complexion, and frank-looking eyes. His dress was somewhat stagey, and, like my own, "seedy." He wore his hat very much on one side, and had a knowing, devil-me-care look about him that told at once he was a Bohemian. He smelt of beer and tobacco a yard off. Instinctively he knew what I had been about, so, with a grin and a familiar nod, he exclaimed: "Been after the billet?"

I said I had, and added that three others had been there.

"What! Three before you?" he exclaimed. "Well, it is hard times, and no mistake. No use of me going in."

With that he wheeled on his heel, and walked alongside of me, whistling as carelessly as you like.

"You look down on your luck?" was his next remark.

I told him I had good reason to be so, and, tempted by that strange feeling that sometimes makes you deluge any stray acquaintance with your troubles, I told him how I

was situate. He roared with laughter when I told him about the quiet little business.

"So it was you was bit?" he exclaimed, after drying his eyes on the sleeves of his coat. "Old Jinks drew you in nicely; you *was* green, and no mistake. However, the best of us will make a mistake sometimes. Where are you off to now?"

"To Walworth. I see an operator wanted there."

When my new acquaintance heard this he went into convulsions of laughter. Seeing my vexed look he tried hard to control himself, and in broken tones told me to bless my stars that I had met with him, finishing up with the assertion that I was *green*, and no mistake.

"You come along with me," he added; "I'll introduce you to some fellows that will be able to tell you summat about the Walworth crib. Come along, it aint far—just the other side of the "Eagle."

Although I had been more than a year in London, I had failed to make any acquaintances in the profession, so that I had a wish to see what they looked like, and as we jogged along the City Road I wondered if they were all like my new acquaintance. In a short time we reached the house, and passed into a private compartment, where we found some five or six young men smoking and drinking four ale out of pewter pots. My companion was hailed by the name of Latt whenever he appeared, and a pot of beer handed to him. He evidently was a favourite among them. I was introduced as a brother, and was ordained a member of the community upon standing a pot of beer. I then had time to look around and make observations. They had all much of a sameness about them: they had the devil-me-care look and the restless eye, the shabby and mixed clothes with the cleanly paper collar; beer and tobacco was their principal perfume. Still a set of jollier dogs I never saw; with one exception they seemed to be gifted with a high sense of the ludicrous, their quips and repartee and hearty laughter being quite refreshing to hear. This exception was a sour, red-haired fellow, with bloodshot eyes, who rejoiced in the grim sobriquet of the "Assassin."

"It's supposed he killed some one, sometime," was the careless and vague explanation my friend Latt gave me when I enquired the origin of it. "He is down on his luck very bad just now," he added. "He had a nice little stand out Wood Green way, and he went in to get a half-pint, leaving his tent and camera sitting at the corner of the house. While he was smacking his lips over his beer, a young cow came along the road, and seeing the tent spread out in a provoking sort of manner, he went at it straight and played old Harry with it; not only that, but when the "Assassin" went out to expostulate with it, poker in hand, the brute doubled him up so tight that it took him a week to stretch himself up again. "Boys," he continued, addressing the others, "my young friend here was thinking of applying for the Walworth crib."

"What!" cried the lot, "Old Mother Moggs!"

Even the "Assassin" lifted his gloomy eyes and looked at me with interest when he heard this. I need not enter into details of the "crib" in question. Enough if I say it was one of the "sweating" shops where the poor operator had everything to do, and where he had a slave-driver over him in the shape of a widow with a tongue like a two-edged sword. The horrors related by these Bohemians relative to this widow would have made old Weller's hair stand on end, and redoubled his hatred to those "lone lorn creturs." One of her operators had twice attempted suicide; another had run away, and never been heard of since; while her last one was then lingering in the hospital. I resolved not to apply for that "crib."

"She once played the 'Assassin' a rum trick," quoth Latt, as he lit his pipe; "didn't she, old boy?"

An oath was that amiable creature's answer.

"Come, old fellow," continued Latt, jingling some coin

in his pocket, "I'll stand you three-penn'orth of your favourite if you tell us the whole game."

After a good deal of pressing, and after he had taken a gulp of his favourite, the "Assassin" blinked his blood-shot eyes, and spoke as follows:—"It wur a rum game and no mistake, an' one as she will 'ave to hanswer for when she goes aloft, I bet, for she as good as robbed me of a fiver! You must know as how the house steward of Colney Hatch is related to me by marriage, and so when they has their *fetes* and galas he is always able to get me a free pass, and manages as how no other photographer can get in. So yer see it was always a nice little thing for me to look forward to. Well, it so happened that Moggs's young man's name was the same as mine, and by some mistake or other the free pass for the *fete* was sent to him instead of me. I was awfully hard up at the time, and the night before the *fete*, to make things sure, I went and made inquiries, when it was discovered that the steward had certainly sent a pass. Well, being well acquainted with the gate-keeper, I managed to get in all right without a pass next morning, and then the first thing I see is a camera and a young fellow working away like mad, and there was that she-devil going grinning about picking up sitters. Under the circumstances I could say nothing, but make the best of a bad job. So I opened out my traps after I had threatened to expose the artifice by which they had gained admission; and as soon as I had seen my friend the steward I made sure they would be kicked out; and in turn I looked for sitters: but the devil a one could I get—they all went to the opposition—and the visitors stood around and watched poor me as if I had been a natural curiosity. I couldn't make it out: but towards night the whole truth burst upon me. I had wheedled a young lady to sit for a glass picture, and was busily engaged in drying the picture, when a friend of hers came running up and exclaimed—

"Why, goodness gracious, you don't mean to say that you are letting him photograph you!"

"Why not?" asked the young lady.

"Why?" replied her friend, "why, because he is a lunatic!"

"The truth was out then! The mean skunks had gone and spread a report among the company that I was an inmate with a foolish partiality for photography, and consequently they carried the day, and, as I said before, tricked me out of a fiver. However, fire and brimstone awaits her yet," he added, as he drained his glass. "And now I will go and get some block ornaments for the old woman's dinner."

He left after bestowing a slow wink upon the company. I did the same shortly afterwards, and on the way home resolved never to go back, for I saw that their companionship could do me no good—in fact, quite the opposite—and, indeed, anyone might see in their society a fair opening of going straight to the devil. Still these merry vagabonds have something likeable about them, and one trait they possess, that it would be well for their more respectable brethren in the art to practise, and that is faithfulness to one another in misfortune.

And now I have come to the end of my sketches, and must write the word—

FAREWELL!

The cloud soon passed away from me. The wheel had gone to the bottom, and was bound to come up again. So take heart of grace, my unfortunate brothers, and look for the silver lining. Remember, the darkest of dark hours precedes the dawn. With resolution and perseverance man can overcome anything. And now, gentle reader, I hope these jottings have met with your approval, and let me hope that, independent of the amusement, you have learned something from them—some little grain of common sense, if nothing else, that made you think—some sentence that awoke in your breast a kindly feeling. If I have succeeded in this, my end has been accomplished. Au revoir

GEO' BRADFORD, of Bath.

The Photographic News.

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COPYRIGHT.

ON another page we print a letter from Mr. Bassano upon this subject, in which he adopts and endorses the recently-expressed opinions of Mr. Brothers on the question. Mr. Brothers was good enough to tell us, in one of his letters, that he regarded our views on this subject as "entirely incorrect." As these views are regarded as possessing some authority by a large circle of readers, it is important that they should at least be based on definite ideas. Mr. Brothers maintains that the copyright of a portrait belongs "entirely to the sitter," who may have the portrait copied or enlarged, or do with it just as he pleases, without consulting the original photographer. But he further maintains that as the original photographer retains possession of the negative, he should always have the right to print from his own negatives.

Mr. Bassano, referring to our remark that "copyright exists in the design of the picture," assumes that when we used the word picture, we meant photograph. We meant precisely what we said. The word picture in its broadest sense simply means a resemblance or representation. In its more restricted or technical meaning it means an artistic representation. But for the purposes of the law of copyright it is clear that no consideration of artistic elements could be entertained. If we meant "design of the photograph," Mr. Bassano thinks that no such "mythical abstraction as design" can exist in a photographic portrait. For the purposes of his argument we will assume that we did mean "design of the photograph," and we think we shall show that his contention is altogether erroneous, and that his conclusion that photographic portraits need not be brought under the provision of the law of copyright is altogether antagonistic to the interests of the profession.

First of all it is desirable, for clearness, to define terms. It seems to be tolerably clear that a misconception of the meaning of copyright exists. We have the highest respect for Mr. Brothers and Mr. Bassano as men of intelligence and portraitists of experience; but we fear that they have scarcely thought out the question of copyright and all that it comprehends. Mr. Brothers would retain for the photographer the right to print from the negative, but give the copyright entirely to the sitter. Now copyright means the sole right to copy or issue copies, and if the sitter possessed the copyright, the photographer could possess no such right. Mr. Bassano thinks there is no design in a photographic portrait. If there were none, no action for infringement could ever be maintained, as it is the design which constitutes the identity of the picture. All photographic portraits of the same person would be precisely alike if there were no design in a photograph. The design is the very essence of a picture, and we here include photograph in the term. Design, of course, involves invention, and that we claim, too, for the photograph. The

photographer invents the pose, the arrangement of light and shade, and of accessories, in some degree the expression, and all, in fact, which makes the portrait distinctive. Mere variation of technical qualities, such as sharpness and clean photography, would make little difference between good and bad portraiture. Perception of character and of pictorial fitness, and pictorial possibilities in the sitter, and mastery over technical conditions, to bring into existence or embody those pictorial possibilities and characteristics, and so secure a picture instead of a mere map of the face or projection of the individual, constitute the portraitist as distinct from the merely mechanical photographer. Mr. Bassano, as a portraitist, has been exceptionally successful, but he will scarcely tell us that it is solely due to producing clean sharp pictures of his sitters, and nothing more! He admits, however, that to make a picture agreeable to the eye, the light and shade and line must be governed by the laws of chiaroscuro and composition, but adds that these are "fixed and learnable laws, and are not inspiration or design." Mr. Bassano opens here a very wide and important subject, not to be disposed of in a sentence. But he is probably aware that there are very high art authorities who insist that in painting a portrait the artist must produce precisely what he sees—what exists, in fact, in the model—and that therefore there is no room for design or inspiration. If it were true that the laws of composition and chiaroscuro were fixed and learnable laws, their acquisition and mastery is an important part of the education of an artist. But they are not fixed laws; that is, they are not such laws that the simple application of them would produce a picture. Mr. Bassano probably knows, as we know, some who can repeat the text of such laws with the glibness of a parrot, but who have no power whatever to produce a picture, or even a satisfactory and pictorial photograph.

There are very many good reasons why photographs should be included in a Fine Art Copyright Act, and many strong reasons why photographers of position should not suffer themselves to assume that such protection is unnecessary. It may be very unimportant whether a copyright exists or not in the portrait of Tom, Dick, or Harry, or in the thousand and one common-place portraits taken in the daily practice of the various studios. But in the practice of most photographers there comes at times an occasion when the existence of copyright in a photograph is of much importance, and unless the law comprehends all photographs, it will not protect exceptional subjects. There is a tendency ready enough on the part of those concerned in legislature to treat photography with contempt, and if portraitists of position aid them by their opinions it might easily happen that by a stroke of the pen photography might disappear from the new Act. This would be more likely than that subtle and complicated qualifications and conditions should be inserted on behalf of photography. In the new Bill, published in our columns some months ago, which it is hoped will become law in the next session of the Parliament, photography is very fairly treated. Copyright in photographs rests in the proprietor of the negative, which protects the photographer; but where a photograph is taken for a valuable consideration—that is, where it is ordered and paid for—the photographer may not sell or exhibit it without the consent of the person for whom it was taken. By this condition the public is protected from the exhibition or issue of portraits without permission, a protection which must be satisfactory to all concerned.

There are various reasons, readily appreciable from the photographer's point of view, why the copyright in a portrait should be vested in the producer. A skilful portraitist generally puts in a portrait more thought, time, and ability than are fully paid for by the guinea received for the first dozen prints from the negative. He has more than one object in producing a fine portrait: he is, of course, anxious to please, and in doing so he hopes to

secure further orders from the negative, and he has, generally, a reputation to maintain. If he possess no copyright in his work, it may be easily copied by the cheap copyists who offer to do such work at half-a-crown, or some such sum, per dozen. This is mortifying enough; but it is not all. A good portraitist almost inevitably has a style which makes his work distinctive; and in many cases we can say, unerringly, that is a Rejlander, that is a Robinson, that is a Blanchard, that is a Sarony, and so on. Probably those who are familiar with his work will say, without risk of mistake, that is a Bassano, when they see one. When, therefore, the cheap copyist reproduces these works, badly printed and rapidly fading, the original portraitist's style being recognized, he receives the discredit of the badly printed and fading print, and is thus doubly wronged, in reputation as well as pocket. It is contended that if the original photographer hold the copyright it may often put the owners of a portrait to inconvenience when they wish to have it copied or enlarged. This is rarely, we think, likely to happen, as the original portraitist, or his representatives, will generally be accessible. Or if all were defunct or *non est*, there would be none to object to the copying without permission. The projected Act promises, as we have said, to consider fairly the rights of all parties, and unless some unnecessary interference take place it is most likely to become law.

THE PHOTOGRAPHIC EXHIBITION.

THE Photographic Exhibition which has just closed was in many respects the most successful of the long series of which the Photographic Society possesses the just credit of holding. It has been successful in the number of visitors in receipts, and in the high general excellence of the works contributed; and, with very few exceptions, in the general satisfaction which has attended it and its management. In regard to the distribution of rewards, it is inevitable that some difference of opinion should exist. But the explanation given by the President at the last meeting when distributing the awards must have gone far towards neutralizing any dissatisfaction felt. The members of the jury, having individually examined every picture, and met for consultation, found that amongst them they had marked for distinction a very large number of pictures, so large, that to distribute medals to all would tend to depreciate the value of medals. On re-consideration, they found that they were absolutely unanimous in their judgments as to twelve of these meritorious works; and to these twelve it was resolved that medals should be awarded. Then came the reconsideration of the remainder, in regard to many of which they found they were only just short of being unanimous. They did not like to leave such highly meritorious works unnoted; they resolved, therefore, that they should be mentioned with honour. No idea of a fourth-rate award of "honourable mention" was intended, but simply the distinction of being mentioned with honour, as of too much merit to be passed over in silence. A celebrated judge once gave a younger man, just elevated to the bench, the advice to deliver his judgments with all firmness and decision, but to avoid giving his reasons, as whilst the first could not be successfully challenged, the second might. We think the reasons given by the President must have satisfied everyone, and materially ameliorated any dissatisfaction with the awards.

A few closing remarks are necessary on the essentially pictorial contributions to the Exhibition. There were no very ambitious attempts this year: no large composition challenging comparison with the painter's art. But there were several very clever and pleasing "subjects." Standing prominent amongst these were the pictures sent by Mr. W. Gillard, of Gloucester; pictures which we should very gladly have seen recognized by a medal, but which received the mention with honour to which we have referred. These were admirably photographed single

figures, in which pose and expression were made to tell a tale. In "Footsteps" we have the listening aspect which tells of footsteps near. "Little Bo-peep" is a charming little girl, as is also the "Little Flower Girl." Admirably managed subjects, artistic feeling, and very perfect photography are seen in every one. Mr. G. Bruce, of Dunse, also sends some very excellent *genre* studies, all of a rich, engraving-black tone, printed on collodio-chloride of silver. The "Interior of a Farrier's Shop," in which a horse is undergoing the process of being shod, is very admirable, both in pictorial composition and truth to nature. The "Little Henwife," "D'ye want a light?" and "Dinna gar me laugh," are all excellent bits of character. Mr. A. Distin, of Fife, whose works we have before spoken highly of in these pages, sends two pictures to the Exhibition this year. One entitled—unfortunately, we think—"Henry Kirke White in his Study," is a single student figure, in a quaint interior, of the very highest merit. The pose, the expression, the light and shade, and the composition are all pictorially perfect, and much more like a copy from an Old Master in painting than a photograph. His picture of "A Washing Day" is also a fine piece of composition. "Beatrice and Rover," by Samuel Fry, is a pretty composition. Beatrice is a pretty and winsome girl, resting on a style, whilst her attendant and protector, Rover, proud of his office, crouches at her feet. The landscape is effective, and the picture pleasing. A clever study by Mr. Henry Dixon, entitled "When Doctors Disagree," consists of three birds; in the Zoological Gardens, we presume. They are pelicans, we fancy; but our natural history may be at fault. One looks ill and disconsolate, whilst the other two look wise and antagonistic, admirably justifying the fantastic title. Mr. Dixon's grand head of a lion, and his son's studies of a lion and lioness, are amongst the most effective things exhibited. Mr. H. Garrett Cocking's "Fern Seller" and "Between the Lights" are very good, but scarcely so effective in subject as some of his former contributions.

The Exhibition was not, as we have before remarked, distinguished by special novelties. The enamels by the tissue process, sent by the Autotype Company, were very effective, but the colour was scarcely pleasing. Some good enamels were sent by Mr. H. N. White, especially as judged by an admirable portrait of the late Mr. S. Phelps. The most interesting novelty was found in the examples of Mr. Willis' platinum process, many of which were of a rich neutral black, without any coldness or tint of blue. It was noteworthy that those exhibited by Mr. Willis, being presumably from suitable negatives, were very perfect indeed, whilst some others were flat, and somewhat cold. We cannot but believe, however, that, properly managed, the process has a great future before it.

FIRE ON THE AUTOTYPE COMPANY'S PREMISES.

THE premises of the Autotype Company, in Rathbone Place, on Thursday, the 20th, were the scene of a very terrible accident, issuing in a serious fire and some irreparable loss. We may say at the outset, however, that it was scarcely possible that such very serious dangers should have existed with so little actual calamity. The collapse and crash down of the large building, and immediate envelopment in fire, during business hours, at a time when nearly a score of persons were on the premises, without loss of life or personal injury to anyone, is really marvellous. Much of the immunity was due, from what we can learn, to the courageous presence of mind of Mr. Walter B. Bird, a member of the firm.

The losses, which are heavy, belong entirely, we believe, to the Company, negatives and other property entrusted to them by their customers being safe at Ealing. The Company keep up an insurance on goods entrusted to them, so that little risk to the public was involved. An

original Teniers, or copper, which was in their hands, had been sent off the day previously to Ealing; but the "Garden Party," by Desanges, was destroyed, together with some drawings by Cave Thomas, Beavis, Poynter, Lucy, Nichol, Lake Price, and L. Cattermole, all of which were the property of the Company. The books and cash box were fortunately saved, and we believe business will proceed as usual.

It seems that a few weeks previously the adjoining premises were burnt to the ground, damaging the party wall of the Autotype premises. Various surveyors representing insurance offices, the surveyor of the Company, and the surveyor of the Board of Works, had examined the premises, and their various instructions for safety carried out; but spite of all, the crash came when quite unexpected. We subjoin some details from the *Autotype Notes*:—

Things appeared safe enough whilst the claims upon the various Insurance Offices were being arranged. On Wednesday last some ominous cracking was occasionally heard, and a fissure in the party wall perceptibly increased. Our artistic staff and clerks naturally became a little anxious, and we summoned afresh a well-known architect and surveyor to report as to the safety of the building. He made a careful examination, and came to the conclusion, that while the wall would have to be rebuilt entirely, we need not alarm ourselves as to any question of immediate danger.

On Thursday morning, however, the fissure had increased, and a warning sound of a split or a crack, not loud, but unsatisfactory, was every now and then heard. The Manager posted out again for surveyors and builders, as he began to share the anxiety of his staff. At eleven o'clock he shifted every person from the upper story, thinking that the only party really dangerous. At half-past twelve, getting more dissatisfied, every person was ordered to the ground floor, and even while getting down books, easels, materials, &c., there were mysterious sounds far from reassuring. At one o'clock, the whole atmosphere seemed alarming, without anyone being able to say distinctly where the danger was. At ten minutes past one, every one was summoned to quit the building, and while in the very act of exodus, the party wall fell outwards into the chasm left by the previously burnt-out house, carrying with it three floors, and pitching all their contents into the space. Some of the people had gone to lunch, but there were some seventeen others making their escape as the building fell; only half the endangered persons escaped into the street, where nothing could be heard but the crash of the fall, or seen, but the cloud of dust raised by it.

The front stood erect, and the wholesale entrance by the side of the gallery was not blocked up. The Manager and a police inspector entered, found the side door into the gallery could be opened, and the ceiling of the front shop had so fallen that it was possible to enter the gallery. To the first shoutings to know if any one was there, there was no response. The assistants had backed into the gallery, and were, probably, for the moment stunned by the occurrence; however, upon further calls, they answered, and the grand satisfaction was experienced of seeing every person emerge, covered with dust, from the fallen debris, and frightened enough, but no one seriously hurt. Neighbours, of course, opened hospitable doors to receive them, and in a few minutes reasonable composure was restored.

In these few minutes, red light and gleams began to flicker all over the debris, and it was soon evident that a tremendous conflagration would follow. There were comfortable fires burning at the time of the fall in at least eight of the rooms; the gas had been lighted in the gallery, as the morning was foggy; and the broken-up floors, framed pictures, partitions, and furniture, open full to the air, afforded every facility for a blaze. In twenty minutes from the fall of the wall the fire had leaped into every storey; it seized on the flooring, ran up the picture-frames, danced round the windows, and sprang with an immense blaze right through the roof. By the time the first engine arrived, the fire was a magnificent spectacle, and had, of course, its London crowd of eager sight-seers. Engine after engine arrived; abundant water was available; but the fire had obtained such a hold that there was but little chance of saving any of the property. By the time the fire in the front premises showed signs of being overcome, the flames burst out in fury in the gallery, which runs back some forty-five feet from the front shop. All the mahogany cases, with examples of classic art, all the framed pictures

which covered the walls, and the gigantic painting, "The Royal Garden Party at Chiswick," valued at 3,000 guineas, were all utterly destroyed. The partners of the Company retired from the scene of the disaster about four o'clock, whilst the engines were still pumping tons of water on the ruins; but all danger to the adjacent buildings was considered to be over.

Immediately upon the outbreak of the fire the Manager, with a fireman and one of the clerks, had again penetrated into the gallery and secured the cash box and the most important books of the Company; but all chance of salvage was limited to five short minutes, so fierce and rapid was the spread of the fire. The building and contents were, of course, insured for a reasonable amount; and although the Company must suffer very considerable inconvenience, there is every reason to hope that its customers will experience very little detriment. The injury to them will be principally a slight delay. Such of the work immediately in hand as required artistic finish was, of course, wholly destroyed; also several large orders, packed ready for delivery. Happily for the Company and their clients, Autotype production is carried on at the works at Ealing Dean. There, all the negatives are stored; and immediate attention will be given to the replacement of whatever has perished in the flames.

The Company have taken the premises No. 11, Rathbone Place, which will be their London address during the rebuilding of the offices and gallery.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY ON WOOD FOR ENGRAVING—PHOTOLITHOGRAPHY—INSTRUCTION IN PHOTOGRAPHY.

Photography on Wood for Engraving.—Valuable inventions are, in some respects, the birds of passage who fly long distances to spread their lovely plumage under a less rigorous climate, but who always return to the land where they first built their nests. The application of photography to wood engraving, which is so successful in facilitating the work of the engraver, has been carried into many distant countries where conditions favourable for its practice have retained it until it has become well known. Now it returns again to France with its reputation enhanced, only it comes back again like the bird of passage, and revisits the spots where it first constructed its nest. A distinguished and indefatigable operator—M. Billon-Daguerre—has taken up this kind of work as a speciality; and at the late International Exhibition at Paris he showed some very remarkable specimens of this process, which he has brought to a great state of perfection. M. Billon-Daguerre, however, suffered on this occasion the fate of many other deserving exhibitors, for the jury did not even think him worthy of a mention. It might have been supposed that his transparent photographs on albumen, which are so highly thought of in the scientific world, would alone have earned for M. Billon-Daguerre the honour of a high distinction. This miscarriage of justice was alluded to at the time in the PHOTOGRAPHIC NEWS, and will be fresh in the memory of its readers. The great improvement introduced into the process by this able inventor consists in the substitution of silver chloride for the iodide of the same metal. By the older system of preparing the plate with this latter substance an inverted print was secured on the wood; that is to say, the blacks were white and the whites black. Thus the draughtsman or the engraver—generally the former—was compelled to work on and correct the image that had been obtained. Thanks to M. Billon-Daguerre, this defect no longer exists, and I suppose that the photographs on wood taken by this process abroad are produced under the same advantageous conditions, otherwise the bird will have returned to its nest despoiled of its plumage. In England this fact must be fully recognized, since the process has been applied there now for some years; at any rate, it must be well known, for photographs on wood have often been ordered here by your countrymen. Without being entitled to the reputation of a novelty, therefore, the process is quite worthy of the praise which is now generally bestowed on it. The bird has found its

season of song arrived, and that is all; for ourselves we have only to rejoice at it. In effect, the artist, thanks to the photographic transfer of his drawing to the wood-block which is to be placed in the hands of the engraver, has no reason to fear that its character will be altered; he will have no occasion to correct his work for the engraver, since it remains in his own possession, and may even serve as a guide and a copy. He is quite free from any chance of accident, and his original work is no longer doomed to obliteration. Formerly this work was quite destroyed by the hurin of the engraver: now it can be preserved as a precious record, and can be reproduced when the need arrives.

Public Instruction in Photography.—Though several societies have held meetings, there is no occasion to give an account of the proceedings, as they appear to have been confined to questions of management and administration. It is better to draw attention to these proceedings only when they have special interest for photographers. As a general rule, the photographic journals keep their readers *au fait* with the transactions of all these meetings, of which the number is increasing from day to day, and this, of course, is a good sign for the future. But meetings are like gardens: we need not for our own purpose gather all that grows in them. It may be of greater interest to glance at the steps which are being taken to push photography as a subject of public instruction. The *Association Polytechnique* has just issued a programme of its public courses of lectures, and among them figures one on photography. To M. Bertin, a very able professor, has been entrusted the duty of delivering this course, and his special aim will be to explain to his audience the progress of the industrial applications of photography. The *Polytechnic Association of France* was founded in 1830, and by the decree of the 30th June, 1869, received its charter of incorporation as an institution of general public utility. Since that time it appears to have attained a very flourishing position, for its courses of lectures are always attended by a numerous and attentive audience, eager to avail themselves of the instruction which is thus given for their benefit. The lectures are not only gratuitous and open to the public, but the professors who give them are honorary, though all are men of the highest position, each in his special faculty. It becomes an agreeable duty to record the efforts that are thus made to popularise photography in all quarters, but these efforts will not suffice to attain the ends of those who hope to see our art occupy a still higher rank. Photography as a subject of instruction must be made to take a definite position in the programme of studies of our schools generally—always and everywhere. It will have to be taught to our youth just the same as history or mathematics, physics or chemistry. Playing with the subject will be of no use; the taste for our art must be given simultaneously with the first rudiments of learning in our scholastic courses, in order that the youth may have it before him in his choice of a vocation, at an age when his desires for it are first formed. Then, and not till then, will he have the subject before him as an object of serious study from which he may expect to derive great results. But what is even more necessary to acquire is the artistic taste which is of so much importance in the practice of photography. We must have schools for teaching retouching, without the careful execution of which the image rendered by nature herself is liable to be ruined by every ignorant first-comer. That we shall always be compelled to retouch there is too much reason to fear, but at least let it be confined to repairing those unavoidable accidents which are easily capable of repair, and let it be carried out in accordance with the principles of true art. These principles are not difficult to be taught, but, unhappily, they are generally disregarded in our studios.

K. VERSNAEYEN.

Correspondence.

REMOVING HYPO FROM PRINTS.

SIR,—Allow me to draw your attention to Mr. Higgins' letter of the 7th October, in which he states that a solution of hypo, being of greater specific gravity than water, will naturally fall to the bottom, and remain there. Now, sir, I think it would be unnatural if it did anything of the kind; in fact, if it was natural for hypo to fall to the bottom, and remain there, Mr. Higgins could not make a solution of hypo at all. I shall have to see a better explanation of Doctor Mastermann's invention before I commence washing my silver prints in that manner. When, and how, did the Doctor invent a method which totally reverses one of Nature's unalterable laws? The diffusion of liquids (and a salt in solution is a liquid) is as certain in its operation as the diffusion of gases, and quite as beneficial in the economy of nature. Hence we have the salt in the sea diffused all through the sea, not going to the bottom and remaining there, and the carbonic acid of the atmosphere diffused all through the atmosphere, not falling to the bottom and poisoning us.

Miller gives Graham's various experiments with the laws of diffusion, and one of them proves the certainty with which salt will permeate all the water within its reach. Soda hyposulphite is placed in one of the groups of salts having a certain rate of diffusion, and it is rather a slow rate, but it is certain, so I stir my prints well up, taking advantage of the law of diffusion; change the water often; do not think the hypo is out in less than twelve hours, and not even then.—Yours respectfully,

Lindley, Huddersfield.

JOHN ALLEN SYKES.

[Our correspondent overlooks a most important factor in the case—the influence of agitation or movement. Mr. Higgin is careful to state that the vessel must not be agitated, knowing how that would aid a process of diffusion. The diffusion of gases is, as a rule, more rapid than that of liquids, but our correspondent cannot be unaware that carbonic acid does not readily diffuse itself through the atmosphere. Every well-sinker knows it accumulates and remains at the bottom of a shaft, because it is heavier than the atmosphere. In the well-known *grotto del cane* it remains at the bottom sufficient to kill any animal thrown there. In regard to fluids, let our correspondent try the following experiment. Fill a dish with a 40-grain silver solution for printing purposes, and flood a dozen or a score of sheets of paper without moving the dish. He will find the last few only imperfectly sensitized, because silver has been steadily withdrawn from the upper strata of the solution. Now let him agitate the dish to facilitate diffusion, and the next sheet will be all right. Experiment alone will determine the exact extent to which Dr. Mastermann's plan will work; but that a denser liquid will sink to the bottom of a lighter one into which it is gently introduced, and will not readily diffuse without the aid of agitation, is beyond a legitimate doubt, and may be easily proved by taking a coloured dense solution, the fall of which can be seen.—ED.]

THE PHOTOGRAPHIC EXHIBITION.

DEAR SIR,—In the current number of the NEWS, Mr. John Vaughan, of Oxford, repeats an accusation made by him in your columns of the 31st ult. against the Council of the Photographic Society of Great Britain, and charges them with "playing fast and loose" in not adhering to their published regulations as regards wall space rental. This week the accusation takes a specific form, and avers that the Society does not apply for the amounts due under this head.

In reply, I beg to remark that the assertion comes with very bad grace from one who is neither a member nor in any way a contributor to the Society's fund, but who has in former years left us to bear the burden of displaying his

exhibits in our gallery. Of course we thank him for his pictorial help, but not for sending the self-same contributions two years in succession (1876 and 1877), when the young bull "Sighting a Stranger," and "A Berkshire Farm" appeared almost irrepressible, and might have come up annually until now had not the (to him) obnoxious charge for wall space intervened to put some restraint upon such a proceeding.

Mr. Vaughan is entirely wrong in saying that the Society does not apply for these charges; we collected a considerable sum from this source last year, and, again now, the Secretary has applied for and already received much that was owing for wall space occupied in the recent Exhibition. If every one acted upon the selfish principle of demanding free accommodation in our gallery, how could the current expenses be met, or in what way could the work of the Society be carried on? We pay a high rent, and incur other heavy charges in order to display the works of foreign and British photographers in one of the finest galleries in London. The policy advocated by your correspondent is not worthy of serious criticism, and the accusation levied against the Society is quite unfounded.—I am, dear sir, yours very truly,

JOHN SPILLER, *Treasurer*.

THE SWALLOW IN FLIGHT.

SIR,—I think "Enquirer" is too much concerned about the Swallow, and must be very narrow in the gullet not to be able to swallow a little bird like that. I also think the artist (whoever he may be) will be extremely "verdant" if he enlightens "Enquirer" on the subject. What is it to him whether the swallow was got on the first negative, or put in with a second one? "Enquirer" has no more right to ask that question than the writer would have had (comparing great things with small) to ask of Mr. Turner, R.A., what body colours and glazes he used to get certain effects with. The picture is *there*, and the effect is enhanced by the dark spot—the swallow and its shadow.—Yours truly,

G. THOMPSON.

[Our correspondent somewhat misconstrues the case. It is a very legitimate subject of photographic curiosity whether the effect is that of a bird caught in its ordinary flight, or produced by some clever dodge. Mr. Gale is quite within his right in declining to say anything; but there can be no impropriety in others asking, in order to determine the question, is this nature's rendering of actual facts, or an artist's conception of them? If the effect be obtained by a dodge, all the credit belongs to the artist's skill; if it be a simple record of an actual fact, it is due to his good luck.—ED.]

PHOTOGRAPHIC VISITING CARDS.

DEAR SIR,—The *Queen's* correspondent "Etiquette" reviews an old idea. Over twenty years ago (in 1858-9) I produced "visiting card portraits" at two guineas per one hundred. The portrait was a small medallion, mounted in the ordinary lady's or gentleman's card with the name written or printed underneath. I believe I was the first to introduce that style of portrait, but there was not much demand for it, and the more popular and better paying style which soon followed crowded it out altogether. Everybody wanted cartes-de-visite; but only the few wanted and used the photographically illustrated "visiting card."—Yours truly,

J. WERGE.

COPYRIGHT.

DEAR SIR,—In your comment on Mr. Brothers' letter you remark: "Copyright exists in the design of the picture;" and I am led, by your subsequent reference to "negative" and "print," to infer that when you use the word "picture" you mean "photograph." Assuming, therefore, that you intend to say "Copyright exists in the design of the photograph," I am constrained to question whether there be any such mythical abstraction as design at all in a photo-

graphic portrait, and, therefore, whether the laws of copyright are in any way correctly applicable to it. As regards design, an artist conceives a picture, and, to carry it out, designs it; but a photographer, in taking a photographic portrait, simply takes that which is already in existence before him, and does not design the negative. Of course, to make the portrait agreeable to the eye, he will, if he be a clever photographer, see that light, shade, and line are governed by the laws of chiaroscuro and composition, but these are fixed and learnable laws, and are not inspiration or design. Therefore, as it seems to me that there is no such thing as design in a photograph (I do not now speak of those pictures which Mr. Robinson so cleverly invents), it would meet every emergency and settle every difficulty if the word "copyright" was altogether abrogated in respect to photographic portraiture. There is really no reason why photographic portraits should be brought under the operation of the Copyright Act at all. All that is wanted is that an enactment should be framed making the photographer the proprietor of the negative, and the sitter the owner of the prints purchased. If a photographer obtains permission to publish a portrait, the copyright thereof may be secured to him by registration of the negative at Stationers' Hall, and this is all that need be done.

Mr. Brothers is a photographer of high standing, and it is important to find that he also is of opinion that the points I have endeavoured to establish are such as would be beneficial to the interests of the profession. His long experience has shown him, as mine has made it patent to me, that in these social matters the law which custom creates is the most convenient, and therefore the best law to recognise and to consolidate.—I am, dear sir, yours very truly,

25, Old Bond Street, November 24th. ALEXANDER BASSANO.

[See leader.—ED.]

SHARP PRACTICES.

SIR,—Can you, or any of your readers, inform the writer of this what should be the course to follow with knaves who take the unwarrantable liberty of printing photographic mounts for cards or cabinets from a plate they may have in their possession, and, without any order at all, send, say, "one or two thousand card mounts," informing you, by letter, that they are just a sample of their present style of work, and, of course, sent on approval, without charge? Can you, I say, or anyone else, state what should be the course to adopt when the same individuals not only send, a few weeks after, a bill for the said very badly got up mounts, but threaten you with immediate law proceedings if you don't pay at once? As I am informed that many others besides myself have been so shamefully treated, and you can yourself be satisfied of it from the fact that the forms for so threatening the profession are lithographed, I beg that you will allow this to appear.

PRO BONO PUBLICO.

[The practice described by our correspondent is not only indefensible as a matter of honesty, but is also very foolish, if it be just what our correspondent describes. But he must see that his remedy is very simple. If he received a letter saying the goods were sent on approval, he has only to return them. If the letter state they are sent without charge, there can be no debt, and, therefore, we presume, no proceedings for debt. At any rate, such a letter should form a good defence.—ED.]

A PHOTOGRAPHIC CLUB.

SIR,—While the subject of a photographic club engages the attention of some of our best men, would it not be worth while, before arriving at too hasty a conclusion as to its form of membership and entrance fee, subscriptions, &c., to take into consideration that, to make it most successful, it should be made general? There might be a reading-room, a lecture-room, in which discussions, *a la* the conversation principle, with refreshments attached; a room where dinners, teas, &c.,

might be had; a laboratory, where once a week some good man might instruct a class in chemistry and the many necessary matters connected with it and used in photography, and but little understood by all. In time, a studio also, with opportunities to attend a class for the teaching of lighting, posing, &c.; a dark room for explanation to those who wish to learn the photographic manipulations, also the making of gelatino-bromide or other dry plates—persons forming such class to pay a certain fee—open to all amateurs and professionals—the members to pay less than the outside public. This, I think, might be made nearly self-supporting, without so large a sum as a guinea entrance fee to a guinea a year subscription. The Photographic Exhibition might also emanate from this centre; and the club journal might be in request. To keep out members who are not members of societies photographic is like the railway companies who put all the obstacles in the way of the third-class passenger, who they admit pays them best. This rule would make each member have to join, if he had not hitherto done so, some photographic society, and not have to pay his subscription to the club only, but also to the society, making his subscription doubly heavy, so that he might be eligible for membership of the Photographic Club.

There are many photographers who have seceded from the different societies—distance, many inducements too numerous and not necessary to go into—who would like very much to join where they could meet lots of old confreres and have a friendly chat and perchance a smoke.* This is now hardly obtainable; but the question is, how to do it, which is more than can be arrived at by yours truly,

JAMES SYRUS TULLEY.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

The ordinary meeting of this Society took place at the Memorial Hall, on Thursday, the 13th instant, Mr. C. ADIN, President, in the chair.

After the minutes of the previous meeting were read and confirmed, six new members were duly elected, viz., Messrs. Percy Collins, William Bleakley, William Broughton, J. M. Bateman, Walter H. Tyas, and T. Thorp.

Mr. C. PEARSON, Jun., then read a paper on "Holiday Photography" (see p. 565), which was followed by a paper, illustrated by diagrams, by Mr. M. NOTON, on "An Exposing Valve for Rapid Dry Plates." (see p. 567).

Mr. A. BROTHERS said that he had seen a photograph of the spectrum produced in colours by Captain Abney.

Mr. THOS. SEFTON exhibited some prints from gelatine negatives, which were very fine photographs. He also showed some prints from collodio-albumen negatives; and, notwithstanding that the former were very good, the latter bore the palm, and which, besides being remarkably good photographs, were excellently well-chosen and artistic pictures.

Mr. J. W. LEIGH exhibited an 11 by 9 collodio-albumen negative. The prepared plate, after being kept four months, was exposed for five minutes, and then kept for another period of four months before development. The result was a remarkably good negative, and spoke volumes in favour of the "old process." Mr. LEIGH also exhibited a printing-frame of novel description which he had made. It was simple in construction and very light.

Mr. W. WATTS exhibited several ladies' combination lockets with monograms "A. E. I." ingeniously contrived to draw out at each side, and form a "passe-partout" for photographs when not in wear. They were executed in silver and of his own design and workmanship, and very much admired for their novel character.

Mr. G. A. BROOKES exhibited a non-actinic lamp for the developing-room. The novelty in this consisted in not producing shadows, which is often the case with some non-actinic lamps. He also exhibited a retort-stand for holding the ordi-

nary conical oxygen retort. The stand contained a Bunsen burner, and was very complete.

Mr. W. B. WOOD then introduced a lamp with a globe of the ordinary type painted yellow.

Mr. W. J. CHADWICK, the Secretary, called the attention of the members to a photo-chroscope, the invention of Mr. Francis, of Rochester, for viewing lantern slides.

The members then retired to the adjoining room, where the Society's lime-light sciopicon was used to exhibit a series of coloured Zulu pictures, and a number of transparencies by Messrs. C. Pearson, Jun., J. W. Wade, W. G. Coote, John Chadwick, and W. J. Chadwick; and, after the usual vote of thanks to all the gentlemen who had brought such interesting subjects before the meeting, and to the Chairman for his services, the meeting was adjourned.

EDINBURGH PHOTOGRAPHIC SOCIETY.

Condensed Report of Treasurer's Intronnissions, 1878-79.

To Balance in hand from last year	£71 2 4	By Rents	£29 9 0
Arrears of Subscription from last year	6 0 0	„ Printing Postages, Clerk	30 9 4
Subscriptions received	101 10 0	„ Carriage and Package of Parcels	1 18 11
Miscellaneous receipts	0 14 7	„ A Tin Trunk	0 6 3
		„ Expenses in connection with Lectures	11 1 10
		„ Subscriptions for Officials and Collectors' commission	2 15 0
		„ Arrears of Subscriptions, 1877-8-9, written off	10 10 0
		„ Subscriptions in arrears, 1876-7-8-9	9 15 0
		„ Balance due by City of Glasgow Bank	33 17 3
		„ Balance in account current with Royal Bank, less £316s. 1d. due to Treasurer	64 4 4
	£179 6 11		£179 6 11

PHOTOGRAPHIC SOCIETY OF IRELAND.

The Annual General Meeting of this Society was held in the Queen's Institute on Wednesday, the 12th inst., Dr. J. EMERSON REYNOLDS, the President, in the chair.

The minutes of the preceding meeting having been read and confirmed, the accounts for the year were laid before the meeting, and were unanimously adopted.

Two new members were then balloted for and elected.

The PRESIDENT, in making a review of the formation and progress of the Society, considered it a matter of general congratulation that the Society had been able to bring together so many gentlemen who were all more or less interested in the art, and that its present prosperous condition was all that could be desired, considering the short time it had been in existence. He then at some length indicated the direction in which he thought it desirable to work, and where advancement and progress were more likely to be made.

A vote of thanks to the President having been unanimously passed, the meeting adjourned.

PHOTOGRAPHIC CLUB.

The first meeting of this Club was held at its Rooms, Ashley's Hotel, Covent Garden, on Wednesday last, the 18th inst. Mr. F. HOWARD was chosen Chairman.

During the business hour an interesting discussion took place on gelatine emulsion.

Four names were proposed for membership, and upon a notice served upon the Secretary in accordance with Rule 11, a Special General Meeting of the Club was called for Wednesday, the 3rd of December, after the formal business hour, to discuss the desirability of altering Rule 2, making the number of the Committee eight instead of five, as at present, and also any general business connected with the Club.

Mr. A. L. HENDERSON was nominated Chairman for next Wednesday.

We are glad to note that this movement seems likely to be a success, and will, we think, supply a want long felt. The meetings are strictly social, even the so-called formal hour being more conversational than otherwise; and the Club will, we feel sure, do great good, affording, as it does, an opportunity for all interested in the "black art" to meet together once a week in friendly intercourse.

* A substantial money award, say £50, might be given for some good invention connected with the progress of photography, determined by a committee chosen of the best and most practical men. This might be done yearly—say a £20, £30, and £50 prize, determinable by the Committee—which should be paid the person inventing it according to its merits.

Talk in the Studio.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The Annual Meeting of this Society will be held at the Society of Arts, Adelphi, on Thursday, December 4th, at 8 p.m., when the election of officers for the ensuing year will take place. Mr. T. Bolas, F.C.S., will show and describe "An Apparatus for the Clarification of Gelatinous Solutions."

BOLTON MICROSCOPICAL SOCIETY.—At the second annual conversazione of this Society, held on the 21st inst., Mr. Bradley, of Owens College, Manchester, delivered a short, though deeply interesting, lecture on "A pool of sea water." The lecturer showed in a forcible manner the almost infinite amount of living creatures in a pool of sea water, and pointed out their peculiar organism and mode of life. Subsequently Mr. Parkinson, of the Bolton Grammar School, succeeded in obtaining, by means of the electric light, two first-class negatives of groups in the gallery of the hall.

THE "FEATHER IN FLIGHT."—Mr. C. D. Davies writes to inform us that the bird in his instantaneous picture was not a pigeon, but a Muscovy duck, or rather drake. It was styled a duck in the letter accompanying it; but to our unsophisticated eyes it looked more like a pigeon, and bearing in mind the incredulity which *gulls* and *swallows* had involved, we did not wish to pass off the latest rapid shot as a *canard*.

PHOTOGRAPHING A GROUP AT NIGHT.—We have received from Mr. Thos. Parkinson, President of the Bolton Photographic Society, a group containing apparently some hundreds of persons taken at 10.45 p.m., a feat probably unprecedented in the annals of photography. It was effected on a gelatine plate by aid of the electric light. Some further details in our next.

To Correspondents.

S. S.—We cannot state with accuracy the length of time necessary for portraiture with the magnesium light. Much depends upon the amount of light, whether ribbon or wire is burnt, whether one strand or more, whether wet plates or gelatine dry plates. A few experiments will best determine. So, also, with the position of the light and its distance from the sitter. The nearer it is the more intense will be the illumination and the shorter the exposure; but the risk of black upright shadows will be greater unless judicious reflecting arrangements are provided. A very good idea may be formed of the effect of the image on the focusing screen. And as magnesium light is very actinic, a good bright image will not require much longer exposure than one of similar brilliancy by sunlight. A suitable lamp with reflector should be used for burning the magnesium.

A YOUNG BEGINNER.—Oil-colours for colouring photographs in oil are obtained of the artists' colourman already ground in oil and preserved in metal tubes, from which a little at a time is obtained by removing the cap and pressing the tube. Raw linseed oil, turpentine, and megilp, or some similar medium, are also required for diluting the colours. The work will be easier and the result better if a good variety of colours is obtained. For flesh tints and head painting you will require white, Naples yellow, raw sienna, burnt sienna, Indian red, vermilion, pink madder, raw umber, burnt umber, ultramarine, brown madder, brown umber, ivory black, burnt carmine, cobalt, terra verte, ultramarine ash, and possibly a few others. For draperies and backgrounds you will require a few others. But we would recommend you to get Newman's Manual of Harmonious Colouring Applied to Photographs; a shilling book which will give you all details.

J. M. NESBITT.—Solution of iodide of mercury has been found by many the best intensifier of gelatine plates. The tone given may not, however, be found most agreeable for lantern transparencies; but we think it probable that the tone might be blackened by applying dilute ammonia after the mercury solution.

W. J. B.—The rich chesnut black to which you refer is often obtained with the acetate toning bath. It is most easily obtained with a toning bath of sulphocyanide of gold. But a primary condition is a brilliant intense negative which will permit very deep printing; then toning in almost any gold bath without previously washing the print will generally give the tone in question. The brilliant richness of tone when obtained often disappears on drying. To restore it, mount the prints with their faces in optical contact with the glass. This was done with many of those to which you refer.

HYPO.—The spots in your negative are probably due to turbidity in the collodion. Such spots are not uncommon in a newly-mixed collodion which may not show any turbidity. Allowing the collodion to stand for a few days will often prove a cure. Adding half a grain per ounce of bromide of cadmium, shaking well, and then allowing to stand a day or two, will generally prove a cure.

IGNORAMUS.—If an error or contradiction appear in an author's book, the better plan would be to write to him for an explanation, as we could scarcely be supposed to give it. In the case in question, you will not, we think, on trying, find much practical difficulty; there are evaporation and other things to be considered. The set gelatine, after washing, &c., will contain only the bromide of silver formed, and as much water as it can hold, and will hence probably require a little water to make up two ounces.

A YOUNG PHOTOGRAPHIC ARTIST.—The mischance you describe, of the transferred collodion film cracking, may be due to two causes. It is probable that you slightly under-expose and push the development, and this will cause a tendency in the collodion film to split. And it is probable that you apply the gelatine to the canvas far too thickly and with a too thick solution. A thick solution of gelatine so applied to canvas will crack all over when it gets very dry. It should be very weak indeed—not more, we should think, than three or four grains of gelatine to an ounce of water, and to this we should add one drop of glycerine. The canvas should be very clean. Wash it with soap and warm water, scrubbing well with a hard brush; finally rinse with alcohol and then water, and see that the water flows in an even wave without showing greasy patches. With a very thin coating of gelatine and a good collodion film there ought to be no cracking. The carbon process is the best of all for canvas.

V. R. N.—We know very little of Leitch's process, and cannot say with certainty that photography is used in it. We believe that a lithographic image being produced on a plate of zinc, the plate is then etched sufficiently deep to produce a printing-block.

BROMIDE.—The proportion of each bromide required to unite with a given quantity of nitrate of silver to form bromide of silver depends on combining proportion, or equivalent. The equivalent of bromide of ammonia, for instance, is 98, and that of nitrate of silver 170. You must therefore add 98 parts of bromide of ammonium to 170 parts of nitrate of silver. The equivalent of bromide of cadmium is 136, of potassium 119, and so on. You will have no difficulty if you adopt this rule. Consult a manual of chemistry for the equivalents of various salts. 2. Bromide of silver is best soluble for photographic purposes in hyposulphites, cyanides, and ammonia; but it is soluble or partially soluble in various other solvents. It is, for instance, partially soluble in strong solutions of bromides of alkaline bases, and in a strong hot solution of chloride of ammonium, and very slightly so in a solution of carbonate or sulphate of ammonia. It is soluble in solution of protonitrate of mercury. 3. Gum-arabic is less liable to swell than gelatine, and more soluble.

Z. I. O.—We regret that our specific duties leave us no time to undertake the testing of prints for our readers. Besides, we do not know of any chemical test sufficiently certain to determine the perfect washing of a print.

W. R. (Eton.)—We do not remember any specific address to which to refer you for crucibles; but your London stock dealer will keep them or procure them for you.

POST TENEBRAS LUX.—Referring to some notes for the further satisfaction of your questions, we find that burning a piece of ordinary magnesium ribbon costs a fraction over a penny per minute. Referring to the question of producing collodion transfers by means of the triplexicon paraffin lamp, we think it worth trying. But trying is the only mode of determining the question. The chief difficulty consists in the fact that collodion images are rarely good if they require long exposure.

ROGER LAURENT.—We will try to send you some examples. You received, we presume, the carbon print sent some months ago. We shall have pleasure in receiving the article. It is desirable that we should receive the copy early, as the issue of the YEAR-BOOK does not admit of delay.

FIDO.—We have seen a studio of somewhat similar design, but we believe that it has not been so convenient and successful as was anticipated. We should prefer the glass, now proposed to form steps, in one long slope, which would give a better and less interrupted light. The chief disadvantage of iron is that it is difficult to arrange blinds and curtains, as you can drive no nail, put in no screw, and find a general want of facility for fixing anything. We do not think iron makes much difference in the heat.

J. P.—Marion and Co., of 23, Soho Square, keep the largest stock of photographs of all kinds of any establishment we know, and will, we think, best suit your purpose for a selection, especially if you make a personal visit and make known your object.

THOMAS PARKINSON.—Many thanks for interesting photograph. We shall have something to say about it in our next. Too late this week.

AN OLD FRIEND.—Thanks; but we never notice such things. If a donkey kick you, it is not wise or dignified to kick again. If you enter into personal encounter with a sweep, you inevitably go smirched. We do not profess to understand what he means.

F. H.—Your negatives were smashed to fragments from imperfect packing. We have warned readers, until we are tired, against packing glass otherwise than in a box. A print will enable us to advise you.

The Photographic News, December 5, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO. PAINTINGS AND PHOTOGRAPHS OF LANDSCAPES—THE PHOTOGRAPHIC CLUB.

Paintings and Photographs of Landscapes.—Mr. Payne Jennings is an unwise man. We are willing to admit that by issuing his landscape studies artistically coloured he has at any rate forestalled others in the matter who would of course have presented them to the public as original "water-colours;" but why did he not put the sketches forward in the first place as paintings, and not as photographs. Now, every art-critic that sees them will call out, and refer to the charming little vignettes as only coloured photographs, whereas they might have been regarded as paintings, and highly praised for their art qualities. We saw a collection of these pretty pictures in the Strand the other day, and were charmed with the delicate way in which they had been treated. There was a view of the Dargle, and another of the Lake of Killarney, to all appearances rare water-colour drawings, but having as we knew the valuable quality of being true to nature. And this quality, we are sorry to say, is seldom possessed by pictures painted for us by many who have a reputation for the work. How many times have we seen Cader Idris or Ben Lomond towering to the skies in hand sketches of this kind, and rocks rising miles high out of the water to represent the banks of a Norwegian Fjord. The last instance of this sort we remember was during the autumn at Skye, while we were stopping at the solitary inn at Schligachan. There is a detached pillar of rock near the top of one of the mountains in the vicinity, and a picture of this phenomenon, painted by an artist of repute, was shown to us one evening in the smoking-room. It was a most weird example of a natural pillar, and of such gigantic dimensions that our party did not hesitate about paying a visit to the spot the next morning. The affair, as might have been expected, turned out but a traveller's tale, and the rock we were shown turned out to be not nearly so big or so wonderful as we had seen a few days before in the vicinity of Little Broom Loch. Afterwards our acquaintance admitted the painting was somewhat "idealised," and if this word means the same as gross exaggeration he was perfectly right. Now in Mr. Payne Jennings' productions we not only have pretty pictures, but we have truth as well, at any rate in all the main features, and they would at once satisfy the traveller as a souvenir, while at the same time, they would not provoke deep disappointment if visitors went to the spots depicted. But Mr. Payne Jennings, though he may have a large sale for such sketches—and we sincerely hope that he may—must not expect to obtain credit as an artist from such work. It was but a mere accident, he will be told, that he set down his camera beside the many lovely spots he has depicted, and it was the quality of the chemicals he used, and not himself at all, that brought out those beautiful contrasts, and fine combinations of light and shade. Mr. Robinson, of Tunbridge Wells, sometime ago managed to secure a "successful bit," which was never admired as a photograph, but as soon as it appeared as a painting in the Dudley Gallery (copied down to every leaf and stone) it provoked warm praise. Mr. Blanchard can tell similar tales. Not long ago, one of the most successful portraits in the Royal Academy, was, to all intents and purposes, a photograph by Mr. Blanchard, which had been coloured. But in neither of these cases did the public or art critic know that the pictures were simple transcripts of photographs, otherwise, we may be sure, there would have been little praise bestowed. It is for this reason we have said Mr. Payne Jennings is an unwise man. Of course, it is possible to stop a painter from using your work, by bringing an action at law, a remedy to which the late Mr. O. G. Reglander frequently alluded with irony, but photographers for many reasons, besides that of cost, prefer to let matters slide. The last instance of an

appeal to a court of law, we believe, was the Maidstone case, in which, our readers will remember, a photograph of Old Maidstone Bridge had been copied with striking fidelity by a painter. The photographer went so far as to prove that the bridge could not recently have been viewed from the same point of view, as the base upon which the camera had rested had since been removed. In this case the judge decided in favour of the photographer, but it is very seldom, as we have said, that photographers feel it to their interest to take such matters into court.

The Photographic Club.—We are glad to see that the Photographic Club has become a fact and has begun its sittings. There is no doubt that there is plenty of room for a social gathering of this kind beyond the meetings of photographic societies. Our friends in Germany combine the two. In Berlin and other cities in Germany where photographic meetings are held, these partake of sociability in the highest degree, and smoking and beer drinking goes on during the reading of a paper and its discussion afterwards. Probably this state of things would hardly be in accord with the British mind, but in the Great Fatherland, where beer is an institution, it would be hard to get on without pipe or glass. No doubt one of the principal laws of the new club will be that "smoking is strictly enforced," and as the first hour is to be occupied with technical conversation, the meetings will have much in common with German Photographic Societies. Here everybody chooses his own company—or, rather, group—round a small table, calls for his beer and enjoys a cigar. The Photographic Club, we see, meets at Ashley's Hotel, Covent Garden, where we have spent many a pleasant evening among the *Savages* and the *Scribblers*, when those bodies frequented the hospitable walls. And from these bodies the Club might take one hint, which is, not to have too strict rules nor too many of them. Again, members, especially at the outset of a club, should consider that they owe something to the club in return for an agreeable evening, and that, beyond going to the club to pass a pleasant hour, they should consider it something of a duty to do so, for the purpose of "making a house." Anybody can found a club or start one; all that need be done is for one of a party to say "Let's be a club," and for the others to reply "Let's," and the thing is done. But to nurse a club, and make a success of it, depends not upon one or two, but upon many, who make up their minds to assist time after time, until the affair is firmly established. We have no doubt there are men connected with the Photographic Club who can and will make it a successful gathering, and for ourselves we think there is plenty of room for such a party. So far as we know, the Solar Club is the only body of the character as yet in existence, and this is but a dining club that meets but once a month, and only in the winter months. The Photographic Club—we hope the Committee will pardon us in saying—if it is to number many members, should be upon as broad a basis as possible, so as to admit amateurs as well as professionals, and not only photographers but those belonging to kindred arts. Many a man is the backbone, from his social qualities, of a club, who has not strictly a *locus standi* therein; and as a social club, to exist, must perforce be made up of pleasant people, it is never well to be governed by very strict laws as to the qualifications of candidates.

HOLIDAY PHOTOGRAPHY.

BY C. PEARSON, JUN.*

The city of Limerick has not many attractions artistically being for the most part poorly built and lying on the flat. There is some very fine scenery, however, in the vicinity well worth visiting. The ancient town of Galway next attracted our attention, and it would have amply repaid a more prolonged stay. It is more like a continental town—Spanish

* Continued from p. 567.

it is compared to—than anything I have seen. We had to content ourselves with a glance, and then pass on.

A small paddle steamer took us to the head of Lough Corrib—an immense inland sea thirty-five miles long, flat, bleak, and wild at the lower end, but mountainous and well wooded at the upper. The grand Connemara mountains are to be seen from the village of Cong, where we got off and spent the night. But I am straying too much from my subject—photography—which had up to this time been rather neglected, more because of the bad weather than anything else. It was amusing to see the crowds of bare-footed and bare-headed children, backed up by a few of the older sort, that turned out and followed when one chanced to leave the hotel with a mounted camera on the shoulder, and to hear the mysterious suggestions that some made as to one's object. What little I did at this village I was mainly able to do owing to the extremely short exposures requisite, as we only arrived at five o'clock in the afternoon and had to leave at seven next morning by mail car. We could have very profitably spent a week here had we been able to spare the time. Noon next day found us in the picturesque town of Westport, which stands at the head of the magnificent Clew Bay. Here again the rapid plates stood in good stead; for, after walking through Lord Sligo's demesne, which borders on the bay, commanding fine views of the district, and open to the public at all times, we were hurrying back to catch the last train out at two o'clock, when we were stopped by the gate-keeper, who informed us that photography was not allowed in the grounds, and that he would not have permitted apparatus to go in, but that we had deceived him by having them packed in cases. It did not trouble us very much, however, as we had got what we wanted, and had no time to lose, having only about six minutes left to catch the train half a mile off. Nevertheless a street view tempted me to try a plate on it, which I did with no more delay than thirty seconds from stopping to going on again. The consequence was that we nearly missed our train, but consoled ourselves with the fact of possessing a photograph of one of the streets of this town in the far west.

From Ballina, which is uninteresting, the mail car took us next day to Sligo—a distance of thirty-seven miles. The later part of the ride was very grand. Richly-coloured hills above on the right and sloping down to the blue Sligo Bay on the left, with the mountains of Donegal beyond, formed a panorama not soon to be forgotten, my regret being that I could not get a still more permanent and visible record of it.

In the vicinity of Sligo is Lough Gill, equal to Killarney and of a very similar character, well wooded, surrounding hills, and studded with numerous picturesque islands. The camera was frequently employed during the limited time we had there at our disposal. In fact, all the journey from Limerick to Sligo was more or less hurried, and was merely undertaken to catch a steamer for Liverpool, via the North of Ireland, and at the same time to endeavour to see as much of this comparatively unfrequented district as possible.

On the return voyage from Sligo we had plenty of company, not to mention cattle, &c. The captain was a jolly fellow, who soon made one feel at home. All were very curious to see the apparatus, and solicitous in helping with anything, so that I soon had a comfortable dark-room fitted up in my cabin below, though it required all one's care in changing, as there was a good sea on most of the time. It is a much more difficult matter than anyone would suppose who has had no experience to carefully change and number, pack or unpack, dry plates in semi-darkness, with the vessel rolling and pitching continually. Add to this the suggestive odour usually found in such places, and you are generally anxious to shorten your stay below as much as possible, and get out into the fresh air. As usual the captain figured among the first subjects my camera set its "eye" on. A rather stiff and formal-looking group—made up of a few of the hardier passengers who had not gone below for a hook and forgotten to return, and who were all arranged looking intently out to sea—formed a subject for a stereoscopic view,

which came out fairly well. Among other photographs I took one of a lady who seemed a little troubled with the *mal de mer*. An old Irishwoman was setting knitting on deck; on, however, bringing my camera near her to take her, but under the pretence of taking a view of the land we were passing, she moved away, guessing what I wanted, thus depriving me of a good picture. Many such incidents as these happen on a voyage, and help very much to relieve the tedium. I remember on a previous occasion, when at sea, a newly-married couple on their honeymoon were spied one fine, warm day resting on the fore-castle, with an umbrella over them, when I was called up and, amidst bursts of laughter, succeeded in getting a photograph of them without their knowing anything about it.

The north coast of Ireland was very fine, equal to the south, but, as a rule, was too distant for the purposes of photography. I succeeded in getting, instantaneously, a faint resemblance of the glorious sunset we had that evening, for the camera can never do justice to such scenes. On looking at it, poor as it is, how vividly it recalls the various circumstances connected with the taking of it! The mild, clear evening when waiting to take it, after tea, we were all on deck in a group round the captain, listening intently to the yarns he was spinning of adventures he had passed through—some on the very coast we were then off. I was at the same time watching a bank of clouds rising which at the time obscured the sun, and from which I wanted it to emerge before taking the view.

I always think that associations and reminiscences such as these, attaching themselves to different scenes, add tenfold to the value one sets on them, and infinitely increases the charms of photography. I could add much more about different experiences and adventures encountered on this and other trips, but I have already engaged your attention too long, and it would be needless, as I have only given the above outline to illustrate one of the many ways in which to spend a summer holiday pleasantly. Some, and I dare say many, would prefer to remain on land, and getting to some quiet and picturesque spot settle down to regular and more methodical work. I would, however, suggest that under whatever conditions we are working, original style of work be attempted, especially in these days of rapid plates. They place in the hands of the photographer quite a new power, which is only just beginning to be appreciated.

Photography in the future will not be so much confined to set landscapes as in the past. The photographer will shoulder his apparatus, which will be light and handy, and passing along will perhaps notice a group of children playing on the village green, and secure an instantaneous picture of them before they are aware; or, taking a view of the cottages, will include a passing cart and horse, with a few rustics about—not standing stock still, staring, as is usually the case at present, but in their natural attitudes. He will also secure agricultural and cattle scenes in their entire naturalness. What will prevent him from taking a landscape with cloud shadows on it, and with the actual clouds casting the shadow embraced in the picture? He will not need to drive some sheep from a particular place he happens to be taking, fearing they will be moving all the time. He will be able to take the ripples and reflections in water with fidelity, and a waterfall will not be represented like so much cotton-wool, but in all its crispness and sparkle. Why should photographs not be taken on a fine out-hazy day? Atmosphere lends additional charms to a picture. We may now hope to see a revival of, to my mind, the most interesting and beautiful form of photography, the stereoscopic transparency, which is far too much neglected at present. Let us try and work up to the examples set by the late Mr. Breeze, endeavouring to produce directly what he obtained by a series of clever combinations. Above everything, let us avoid the production of stiff, though technically perfect, photographs, which seem to be taken more to show the quality or capability of the process than to obtain the great desideratum—a real picture.

ON GELATINO-BROMIDE OF SILVER.

BY DR. VAN MONCKHOVEN.*

The Dark Room.—One of the most important points to be attended to in the gelatino-bromide process is the proper equipment and arrangement of the dark room, and the most stringent precautions must be taken to render it perfectly proof against the penetration of actinic light. As, however, some light must be admitted in order to distinguish objects, there must be a window having an opening of about a square metre, at the height of an ordinary table, and glazed with a couple of panes of ruby glass, superposed one over the other with a thin sheet of white paper between them. The operating table must be placed immediately in front of the window, and be covered with a slab of black marble perfectly level and horizontal. In order to prevent any light from entering through chinks in the door, the latter should be hung with a black curtain, and the whole of the interior of the room should be painted a dead black. Examine the dark room well; shut yourself up in it for a quarter of an hour, and stop the least hole that you may see admitting light. For testing whether window is completely proof against actinic light, take a sensitive plate, and place it in a dark slide; then half open the shutter of the latter, and expose the slide close to the ruby-coloured glass window; leave it there a quarter of an hour, and develop. If a dark line appear on the plate, the colour of the glass panes is not deep enough, and a third must be placed in contact with the other two. All the slides and cameras should be examined in the same way. As slides generally allow some light to filter in at the joints, always cover them with a black cloth when removing them from the dark room, or fogged plates will be the inevitable result. In the open air, photography with gelatino-bromide is very difficult, owing to the imperfection of all ordinary photographic apparatus.

The Nature of the Emulsion.—When a solution of ammonium bromide in water is poured gradually into one of silver nitrate, so as to have the latter always in excess, there is thrown down a heavy curdy precipitate of silver bromide, which, by stirring at the bottom of the vessel, may be made easily to reunite with larger masses. If, before mixing with the ammonium bromide, a little sulphuric or other acid be added to the nitrate of silver solution, the precipitate formed is heavy, and reunites of itself; but if, instead of the acid, we use ammonia, a light white-coloured precipitate is produced, which remains suspended in the liquid. Now when gelatinous, in place of aqueous, solutions are employed, the very opposite of this happens. Take a ten per cent. solution of gelatine in water, and add to it a few drops of ammonium bromide; then shake the solution, and again add a few drops of silver nitrate. Notwithstanding the presence of silver bromide, the solution remains transparent, and if a little of the liquid be flowed over a glass plate it preserves its transparency. But if the solution be allowed to rest for a day the particles of silver bromide, which at first are in a finely divided condition, will renite, and the liquid will turn milky. The addition of a little sulphuric acid will make the liquid remain transparent for a much longer time, but a few drops of ammonia promote the coalescence of the particles, and the liquid at once assumes the opaque condition.

The method of preparing an emulsion of silver bromide in gelatine is perfectly well known. To a solution of gelatine and ammonium bromide and gelatine in warm water is added one of silver nitrate, when white silver bromide is formed in the interior of the liquid. The more gelatine there is in proportion to the quantity of silver bromide, the whiter and finer will the latter be. Now if the emulsion be allowed to rest for a few days in a warm place, it will ripen—that is, it will become sensitive to light, at

the same time that the white colour passes into a green. Examined with a magnifying glass, scarcely any grains of silver bromide will be seen in the emulsion when freshly made; but when ripened, coarse grains may be perceived even with a single lens, especially on the edges of a plate where the films thin out. Experience has shown that the greener an emulsion is, the more sensitive is it to light. Emulsification, therefore, has the object of converting bromide of silver in its white and finely-divided condition into one where its colour is green and its particles much coarser, but where its sensitiveness to light is much greater.

Preparation of Gelatino-Bromide Emulsion.—Take exactly 10 grammes of Nelson's No. 1 photographic gelatine and 8 grammes of pure dry ammonium; put the two together in a flask, and pour over them 250 cub. centim. of distilled water. In about a quarter-of-an-hour the gelatine will have swelled up, and on placing the flask in warm water, the two substances will dissolve. Meanwhile weigh out 12 grammes of silver nitrate, and dissolve it in 50 cub. centim. of water; then pour the latter solution by small portions at a time into that of gelatine, shaking the mixture vigorously every time that fresh silver solution is added. When the whole has been poured in, add 5 cub. cents. of pure solution of ammonia, density 0.910, and shake the mixture again thoroughly. The ammonia has the effect of making the emulsion ready for use at once—or, where great sensitiveness is required, in twenty-four hours—thus avoiding the necessity of waiting several days to allow the emulsion to ripen; it also prevents the gelatine from decomposing. Now pour the emulsion into a porcelain dish, and place the latter in a pan of cold water, in order that the gelatine may set. So soon as that has happened, remove it from the dish, put it into a bag of coarse linen cloth, and squeeze it through the interstices of the cloth by wringing the neck of the bag. Let the shreds fall into a large vessel full of cold water, and wash them well; washing for about six hours in water, renewed three times during that period, will be quite sufficient. Collect the shreds of emulsion on a sieve, and melt it at a temperature of 35° C., and it is ready for use.

Coating the Plates.—Before coating them the glass plates must be perfectly clean. In winter they should be slightly warmed to enable the emulsion to flow freely; but in summer this is not necessary. The emulsion is raised to a temperature of 40° C., to render it perfectly liquid, and it is then poured into a glass funnel lightly stopped with cotton wool, which acts as a filter. To deprive the cotton of the adherent fatty matter, which would repel the liquid and not allow it to filter, it must be boiled for half-an-hour in a one per cent. solution of caustic soda, and its fibres then separated by hand. The emulsion is kept warm during filtering by placing the funnel of glass inside a double one of metal filled with hot water. Let the lower extremity of the glass funnel touch the bottom of the jar or beaker into which the emulsion is filtered, so as to avoid the formation of bubbles.

Having placed the plate in a perfectly horizontal position, and resting on three pieces of wood, pour a quantity of the emulsion (in the proportion of about ten cub. centim. for a quarter-plate) on the centre of it, and with a glass spatula spread the liquid over the whole plate in an even film; to do this properly requires practice, but the necessary facility will be easily acquired by those who have to work with wet collodion. Never pour back any superfluous emulsion into the beaker, or all subsequent films will be full of bubbles. Lay the plate thus coated on the marble table to set, and while that is being accomplished a second and a third plate may also be coated. When the emulsion is set, place the plates in a drying-box, arranged in such a way that a current of warm dry air may pass above and below each one. This operation of coating the plates must be carried on continuously until the whole supply of emul-

* Abstract of a lecture delivered at a meeting of the Photographic Society of Belgium.

sion is used up, for if the liquid be kept warm for a long time, or if it be allowed to solidify and be then again melted, the gelatine loses its property of setting, especially in hot weather, and the films spring off the plate when being developed. During the whole of the operation the plates must be kept strictly in the dark; no light must be allowed to enter the room where it is being conducted, except that which passes through the ruby panes.

Preserving the Dry Plates.—The plates coated with emulsion must not be exposed to the air, but must be wrapped each in an envelope (like that of a letter) of black paper. Or four plates separated by a folded Bristol board may be placed in such an envelope, and three of these envelopes in a cardboard box. All the plates must be kept in a dry place, or they will spoil and give foggy pictures.

Exposure in the Camera.—This operation, so simple in the collodion process, presents very great difficulties in the case of gelatine emulsions, on account of the excessive sensitiveness of the plates. In the first place it is almost impossible to meet with a dark slide which shuts so closely as to be perfectly light-proof; more especially the grooves in which the shutter slides are defective, and admit light. To prove this, place a sensitive plate in the slide, and expose it in the camera, but do not uncap the objective; it will generally be found, on developing the plate, that it is veiled all over. The camera itself must also be carefully examined to see that no light penetrates by the slits in which the stop slides, or by the ring which carries the objective. Generally—and especially when working in the open air—the best way is to cover the whole of the camera completely with a closely-woven linen cloth of a black colour. Only the opening of the objective should be left free, and the cloth drawn closely round it. Even the dark slide should be open under the cloth. Without these precautions, nine times out of ten the images will be fogged.

(To be continued).

ON RETOUCHERS AND RETOUCHING.

REFERRING to an article in a contemporary in which it is remarked that it is generally *de rigueur* to assume that retouching is an evil, even if not an unmitigated one; and the wielders of the stump, pencil, and brush are generally spoken of by their employers as negative spoilers, who ruin the plates which have cost the operator so much trouble, besides eating up a large slice of his profits, *Design and Work* has the following remarks:—

“There are retouchers and retouchers. There is the operator who is his own retoucher, and who neither knows nor cares anything about drawing. There are also the retouchers who are not operators, but who have been trained for their own department, and who do not spoil the plates which pass through their hands.

“Some ten years ago, when retouching was first introduced from the Continent, the supply of retouchers was mostly drawn from the schools of art, and they were generally selected from among those students who had considerable facility in shading from the antique, both by hatching and stippling. Of special training, they had only to add the study of the anatomy of the head (in the case of many this was not an addition, having formed a part of their artistic training, and taking the shape of studies in chalk and charcoal in addition to lists of Latin names, which are soon forgotten), some practice on the negative film, and a slight practical acquaintance with the photographic process, so as to understand how a negative is produced, and to be able to judge of how the retouching would affect the print.

“At first only the best negatives were retouched, and a special charge was made for modelling; but gradually the retouchers gained greatly in rapidity of working, and the desire of the public to be smoothed increased until such a thing as an unretouched portrait is scarcely sent

out except at the special desire of the sitter. (In Canada it is, I believe, the custom to send out unretouched, untouched, and unmounted specimens.) It was also found that all sorts of blemishes could be removed from the plate by the retoucher if the requisite amount of labour were bestowed upon it, and he was henceforth expected to turn any sort of a negative into a beautiful picture.

“About this time operators began to be careless about dirty backgrounds, pinholes, spots, streaks, rests showing, and so on. What did they matter? The retoucher could take them all out! And what was the use of trying to get a fully-exposed plate of a child? Children are always so restless! And here were two or three under-exposed plates, which, with a little extra labour, the retoucher could, nay must, turn into something presentable, else what was he there for? With groups it was the same thing; they were under-exposed, or else they were under-developed to such an extent that nothing but freckles seemed visible, and it was almost impossible to get rid of them.

“Then, again, the operator has a mania for trying new ‘wrinkles’ in the way of varnish, in the search for some method which will give him or his assistant less trouble, paying no regard to the fact that it takes some time to adapt the hand to a different film, and that the retoucher can neither work so well nor so rapidly when a hard surface which breaks the points alternates with what appears to be an entirely unprotected film, which requires to be hardened, and being then perhaps too hard, has to be softened again, entailing a great loss of time as well as temper. A matt varnish is succeeded by a glossy varnish rubbed down by the finger; then follow, in succession, water varnish, gum water, spirit varnish, softened with spirit or turpentine, or rubbed down with cuttlefish, when the round begins again.

“Then in course of time operators, who could not retouch a negative to save their lives, having seen the operation performed every day for years, begin to think they know all about it, and to lay down the law as to what is to be done. They have ideas on the subject of high lights, and have read somewhere that the high lights on the nose and forehead *may* be heightened, and that lights *may* be put in the eyes. This ‘*may*’ they interpret to mean ‘*must*,’ and high lights they will have, even if they should put them in themselves where in nature there is a deep shadow, saying, in answer to a remonstrance, while pricking at the eyes with a pin—‘Oh! come now! draw it mild; anybody can put in high lights and prick the eyes! You don’t need to know how to draw to be able to do that!’

“Then the public has learnt, or thinks it has learnt, that anything can be done by retouching. So Mr. A. requests that he be made to look at least twenty years younger, and insists on having every line of wrinkles removed. Mr. B. is quite bald, but he would like a little hair on the top of his head. Mr. C.’s nose is decidedly ‘*tiptilted*,’ but the lady he is going to send his photograph to is somebody who has not seen him for a long time, and he would like it to be good, so would Mr. S. kindly tell his retoucher to give that feature a Roman cast? Mr. D.’s hair stands up like a brush—couldn’t it be sleeked down? Mr. E.’s moustache is not quite so flourishing as he could wish it to be. Mr. F. has a beard of three days’ growth, which he has not been at the pains to remove (that task being reserved for the retoucher), and he ‘can’t abide’ freckles; so, of course, the developer has been so sparingly used that they are perfectly transparent, being about the size of a drop of rain, and as numerous as stars. Mr. G. has the mark of a deep cut across his cheek, and a deep perpendicular hollow. Miss H.’s mouth is very small—very small indeed—not in the least like that immense one you have given her. ‘Oh! fie! you naughty man! what have your retouchers been about?’ Mrs. I. so much admires that lovely photograph of Mrs. Langtry, and would like to be taken just like that. She is not at all pleased with her

last sitting; she has seen the proof, which makes her much too old, quite stout, and none of her friends like it. Even this last the retoucher is expected to remedy.

"To remonstrate, and say that to remove characteristic lines, and to introduce in their stead billiard-ball-like rotundity, is not art, is of no avail with people like these, who do not care for art, but wish to be improved (?); and as they are customers, Mr. S. says to his retoucher, you must just humour them—art or no art!

"For the operator, when speaking to the customer, to blame the retoucher, justly or unjustly, for every want of success with an—'Oh! yes! I assure you, Mrs. K., it was a capital negative, but the retoucher has spoilt it'—is merely a way (perhaps a natural if not a justifiable one) of diverting that worthy dame's wrath from himself, and will not hurt the other man, who does not come in contact with the siter at all, but sits at his desk 'chewing the cud of sweet and bitter reflection,' from time to time looking through his magnifying glass, and thereby probably enlarging his grievances as well as his work.

"It is useless to demand that an ill-lighted and ill-posed picture be turned into a work of art, and at the same time that attention should be paid to all the crotchets of customers—that perfect rotundity should be produced, and that all should be combined with rapidity of work—because the things are incompatible with one another. In order to secure the best return for his money, the photographer should get his operator and assistants to pay attention to a few points hereafter enumerated, and then try to persuade his public to *put up* with having their portraits treated in a legitimate manner—namely, simply having freckles and accidental marks removed and exaggerations slightly softened; no meddling with the eyes, in ordinary cases, no reckless introduction of high lights where none could possibly exist, nor changing of pugnoses into Roman, and weather-beaten skins into satin.

"It is a matter of course that in connection with posing and lighting the operator will do the best he can, and that when things do not turn out satisfactorily, it is the duty of the retoucher to do his utmost to set matters right. As regards an occasional under-exposed or under-developed plate, he will probably be quite willing to do his best with them also; but when plates coming under one or other of these denominations demand from one-fourth to one-fifth of a day's work, it is not wonderful if his patience be overstrained, and the result of the last plates give evidence of hurried work. It is hardly necessary to say that when there are duplicates the best negatives should be sent to the retoucher at first, and not after he has wasted time in trying to patch up an inferior one.

"Having secured a properly-trained retoucher, do not make him waste his time and undergo the drudgery of varnishing and revarnishing, or spotting and retouching streaky, pinhole backgrounds, which could be done as well by some less highly-paid member of the staff, if it could not be dispensed with altogether by providing clean backgrounds. Then let the prints be carefully spotted, as there are often marks which it takes less time to spot out in a dozen prints than it would to remove carefully and entirely by puncturing from the plate.

"Do not always be interrupting the retoucher, or inquiring: 'Is that negative not done yet?'—as that is a sure way of causing the work to be hurried, and thus by no means improve its quality.

"With regard to the retouching medium: in choosing a preparation for a retouching surface, other things being equal, give the preference to that on which the retoucher can produce his best work most rapidly. And, lastly, let the final varnish be put on smoothly and free from dust.

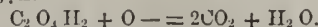
"There is absolutely nothing new in these remarks; yet, though some readers may regard them as platitudes, in many other cases, if they were carried into practice, we should hear less about 'negative spoilers.'"

THE EFFECT OF SUNLIGHT UPON HYDROGEN PEROXIDE.

BY ARTHUR DOWNES, M.D., AND T. P. BLUNT, M.A.*

WE believe that it has not been previously observed that hydrogen peroxide in solution is decomposed by sunlight; it may therefore be of interest to state that during the continuation of our investigations on the chemical effects of sunlight, we found that (1) after about ten months insolation aqueous solutions, containing about 8 per cent. of hydrogen peroxide, were entirely destroyed, and that (2) corresponding solutions shielded from light proved much more stable than is commonly supposed. We are inclined to think that the insolation needs to be prolonged—although we have made no direct observations on this point—because some of the solution, exposed in a thick glass bottle standing in a window, was found to be still of considerable strength after a period sufficient to destroy a corresponding sample in a thin test-tube.

We have elsewhere shown that oxalic acid is destroyed by sunlight by the oxidation of its hydrogen by external oxygen, thus:—



There is not, we believe, any analogy whatever between that case and this. There we have the "chlorous radicle" C_2O_4 in combination with the basylous H_2 , the latter being seized upon by the superior affinity of the external oxygen stimulated under sunlight. Here we may regard the hydrogen peroxide as made up of two atomic groupings of the chlorous radicle HO and, if the theory we suggest be correct, the decomposition in this case is brought about by the dissociation of these radicles. We believe that the tendency of sunlight is to dissociate (or "weaken the internal bonds" between) what we have termed "chlorous radicles," whether these be simple, as oxygen or chlorine, or compound, as HO , and thus to promote their combining energy, or to bring about a more stable arrangement of their constituent atoms.

A NEW STEREOTYPE COMPOSITION.

A composition which may be found useful by experimentalists in photo-engraving is given by the *Scientific American*. This is known as Jannin's cement, from the name of the patentee, a resident of Paris. The cement is simply a mixture, in suitable proportions, of yellow oxide of lead (the quality known as massicot being preferable) with glycerine. Several other metallic oxides and matters may be mixed with the cement, so as to suit the quality or the colour of the cement to the nature of the work to be produced, but the two essential compounds are yellow oxide of lead and glycerine. The proportions of oxide of lead and glycerine vary according to the consistency of the cement it is desired to produce. The proportion of glycerine will of course be larger for a very soft cement than for a stiff cement; it is not necessary, therefore, to specify the exact proportion of each of the two essential compounds.

This cement is especially adapted for moulding those objects which require an extreme delicacy in the lines of the cast, such as engraved blocks and plates, forms of printing type, photoglyptic plates, &c. Under the influence of gentle heat it sets in a few minutes, and then resists perfectly both pressure and heat. When set, it is also a very good substitute for natural lithographic stones, and it can replace them for many practical purposes. It can also be used for artistic reproductions, such as *facsimiles* of terra-cotta, whose colour and sonorous quality it possesses. Though setting to great hardness in a few minutes, it does not shrink. Massicot, it may be observed, is an old name for litharge, but the term is more generally applied to the yellow oxide of lead, prepared from the scum of the molten metal by roasting until the colour is fully developed. For purposes in which the colour is of no moment, the scum itself would doubtless answer, provided it is thoroughly oxidized.

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A PHOTOGRAPHIC CLUB.

ENGLISHMEN are said to be essentially clubbable men; insular and unapproachable to those whom he knows not, he likes to form one of a circle or coterie of common tastes to whom he is known. But the circle or coterie must have its bond of union, each member must recognize the privilege of belonging to it, inaccessible to all outside. It is not simply a society with a common business aim, or scientific object, it must, as a rule, involve a social element. The members have generally the facility of eating together, drinking together, and entering more or less into social relations.

Photographers have from the commencement of their art-science manifested something of the gregarious element, meeting together to discuss the new wonders they were daily making acquaintance with, but have not manifested much of the social tendency. Their ardour has been chiefly scientific, rarely inducing them to break bread with one another. Many years ago, a few choice spirits, members of the Photographic Society, formed a Photographic Society Club of a social character, the members of which dined together on specific occasions, talked of their experiences, and exchanged trophies. The death of some of the members, and the subsidence of zeal on the part of others, was followed by the dissolution of the club some sixteen or seventeen years ago. Partly from its ashes, sprang into existence, very shortly afterwards, another club, entitled the *Solar Club*, a society of gentlemen in *lux* way. This has continued in successful existence, the members dining together at regular intervals during the session of the Photographic Society. The fact that the number of members is limited to something like five-and-twenty indicates, what is undoubtedly the fact, that this is a somewhat select and exclusive coterie. But there has been no general aggregation amongst photographers other than that found in the various societies.

An effort has recently been made, however, to alter this. The South London Society has always been distinguished by enthusiasm and by social tendencies. It is the only society in London in which the members dine together once a year, and they are entertained once every year at the house of their genial president; and some of the members have resolved to form a Photographic Club for social intercourse amongst photographers and all interested in photography, for there appears to be no restriction in the rules as to eligibility for membership. All candidates duly proposed, whether they be professional or amateur photographers, or in any way interested in photography or photographers, it appears are eligible for the ballot for membership. At one time it was contemplated that membership of some photographic society should be a necessary pre-requisite for candidature. That, we think, would have been an unwise limit. There is not necessarily any connection nor antagonism between membership of a society and membership of a social club.

The rules which are before us are simple, and relate chiefly to the necessary regulations of any organization. There is one rule of the working of which we are doubtful. An hour is to be devoted each evening to technical discussion, under the presidency of a chairman. This, we fear, will be found inimical to the social character of club meetings. That conversational discussion of technical matters will arise amongst a number of gentlemen with a common subject at heart is quite certain; but it is a question whether it might not be more pleasant arising and being conducted in an informal conversational manner, than when provided for by the formal machinery of a business meeting.

There are already two photographic meetings held every month solely for the discussion of technical matters, at which, however, discussion often flags. It is true that during the past summer a series of improvised weekly meetings were held at the establishment of a London photographer, without the machinery of a society, and at these meetings, as the president of the South London Society remarked with surprise, the discussions were lively and brisk. But this was, we apprehend, chiefly due to the somewhat informal character of the meetings, and partly the fact that, being freed from the formal arrangements of a society meeting, the proceedings were not necessarily formally reported in the journals. It is true that in all probability the club technical discussions will be somewhat free and easy in their nature. In some of the Continental photographic societies, the ordinary meetings are free enough from restraint, tobacco and beer being the usual accompaniments to scientific discussion; and, so far as we can judge, the discussions do not suffer in interest or precision as the consequence of this social practice, whilst it must at times materially relieve the tedium of a long dry paper of little practical interest. The club technical discussions will probably partake somewhat of this character. Regarding technical discussions, let them remember it is possible to have "somewhat too much of this!"

The aim is one which we think should meet with general approval, and much depends on the management as to whether it becomes a great success or dwindles into an unimportant clique. All are eligible, in country as well as town, country members only paying half the amount of subscription. The club-room, we may add, is central, being in Henrietta Street, Covent Garden, and we may also add that the Secretary is Mr. G. C. Cutchey, of Loughton, Essex.

NIGHT PHOTOGRAPHY.

WE briefly mentioned in our last a marvellous feat in photography, one beyond question unparalleled in the annals of the art. It consists in the production of a group of upwards of one hundred figures in the gallery of a large hall within an hour and a quarter of midnight. The photograph is excellent, sufficiently well defined to justify the intention of having it enlarged. The photographer is an amateur, but evidently one of great enterprise and ability. To Mr. T. Parkinson, the President of the Bolton Society, and Principal of the Grammar School at Bolton, belongs the credit of pioneer in this new phase of photography.

The scene was the Albert Hall, Bolton, and the occasion a conversazione of the Bolton Microscopical Society. A couple of electric lamps swung in front of the group; one light, worked with a Siemens machine, gave a light equal to three thousand candles: the other was a Gramme machine, the light equal to six thousand candles. The first lamp was placed at about forty feet from the group, and the other about seventy feet. One of Wratten and Wainwright's instantaneous gelatine plates was used, and with a Dallmeyer's cabinet portrait lens, and a stop one inch and a half in diameter, an exposure of forty-five seconds was sufficient to give a well-exposed negative, when developed with alkaline pyrogallol acid,

The attempt was a bold one, and the success complete. What variety of memorial groups will follow we cannot anticipate, now that Mr. Parkinson has shown the way. For the detailed operation we have not space at present, but we hope to give Mr. Parkinson's own account of the matter in the forthcoming YEAR-BOOK OF PHOTOGRAPHY. We may here, however, indicate what appears to us an important point in the arrangements. The two lamps were placed at different distances in front of the group. That nearest would give the greatest vigour, whilst that at a great distance would give a more diffused light, and greater softness. Hence the group is free from the harshness of light and shadow which is generally associated with the electric light, and artificial lights generally.

Since writing the above remarks we learn that other plates were exposed. One of Cussons and Co.'s extra rapid gelatine plates was exposed for thirty seconds, with a pair of Dallmeyer's patent stereo lenses, and yielded an excellent negative, prints from which will be issued with Mr. Cussons' little pocket almanac shortly to be published. The stereoscopic negative was produced by Mr. W. Shipperbottom.

FRENCH CORRESPONDENCE.

LECTURES ON PHOTOGRAPHY IN FRANCE AND IN ENGLAND.

In the number of the PHOTOGRAPHIC NEWS for the 21st of November last, a valued contributor, speaking of the lectures on photography which are about to be delivered in Paris by M. Davanne and by myself, expresses a fear that a long time will have to elapse before courses of the same kind will be instituted in London at the charge of a spontaneous grant from the English Government. We on this side of the Channel are certainly rejoiced that our enterprise meets with favour among our friends on the other side, and we should be still further honoured if our example were thought worthy of imitation. For my own part I expressed an opinion only that as the photographic art is much more popularized in England than here, lectures of the kind indicated were less likely to be valued than they will probably be in France. It is not that I consider it useless anywhere to organise a course of lectures on a science which is able to render so many and great services, nor yet that I refuse to approve a project for enlisting in its behalf the action either of a public department, or, in default of that, of any photographic society which would properly direct its energies in that direction.

The author of the paragraph to which I have been alluding maintains, with perfect reason, that photographic chemistry and photographic physics constitute of themselves complete faculties, calling for a distinct system of instruction quite apart from that usually given in ordinary physics and chemistry. Such a statement is quite true. In the year 1863—a period which many will consider merits the epithet of "long ago"—I gave a series of lectures at Marseilles before the Faculty of Science in illustration of a photographic exhibition that was held there at the time. The Dean of the Faculty, the lamented M. Morren, was kind enough to afford me all necessary facilities for arranging the course, and gave me his valuable assistance in preparing the lectures; but even now I can recal the astonishment with which he marked the reactions of light on numerous substances previously quite unfamiliar to him. He had, in fact, in the course of a long and brilliant scientific career, never had his attention called to these special results, and the phenomena were to him quite unexpected. Photography is, in truth, a science of itself; those who seek to study it, whether they be already advanced in scientific attainments, or young beginners, or even professional photographers, have all to acquire a special kind of information on the nature of the operations that they have to carry out, in order that they may understand the theory of the physical and chemical facts that present

themselves. The progress of photography must necessarily become more rapid when those who practise it as a profession bring their every-day experience to bear in aid, so to speak, of the researches of the theorists, who often fail in the practical details of the science.

To return, however, to the subject we were discussing, after a digression which has already been extended to too great length, let me draw attention to the circumstance that the course of six lectures to be given by M. Davanne at the Sorbonne is organised by the Scientific Association of France, and will probably be attended by the same class of persons as would attend a similar course in London. Quoting the words of the introduction to the published programme of this course:—"It is a subject of regret that there does not exist in France a central institution, like the one that has now been established in Belgium for more than ten years, where anyone who feels an interest in learning and following the general photographic processes can with facility and convenience acquire the necessary information. The Council of the Scientific Association of France, presided over by M. Milne-Edwards, and the President of the Photographic Society of France, M. Peligot, have together arrived at the conclusion that this want might, to a certain extent, be met by the organisation of a course of lectures bearing on the general principles of photography. The principal object of these lectures will be to make known, both by oral teaching and by experimental demonstration, all those photographic processes that up to the present can only be studied by means of works in which the special branches are treated. A considerable part of the course will be devoted to the elements of the subject and to those several photographic processes a knowledge of which is necessary for the different applications of photography. The lectures will be more especially addressed not only to artists and to scientific men, but also to amateurs and to those professional photographers who desire to complete their practical knowledge by a more extended study of the reactions which come before them in their daily work." These few words will suffice to describe concisely the nature of the instruction which our esteemed colleague, M. Davanne, has undertaken. There is no doubt that the object he has in view will be fully attained, for he knows thoroughly all that he says, and he carries out completely all that he takes up.

Here, then, we have one of the sides of the question whose requirements are completely satisfied; but it has other aspects, and it is one of these that has been taken into consideration, when the course of lectures, in which photography will also have a considerable part, was arranged at the National School of Decorative Art. This course, the profession of which has been entrusted to me, will, it is intended, comprise all the methods of reproducing works of art for industrial purposes, as well as the means of treating original works of art with the object of copying them. It is not, therefore, specially a course of lectures on photography itself, but one in which it will certainly occupy a prominent place, since photography is incontestably the most faithful, the quickest, and the most economical means of reproducing original works.

Perhaps I may be allowed to enter a little into detail, so as to make quite clear the distinction between my lectures and those of my colleague, M. Davanne. He will take the elements of the art as applied to the operations that the photographer is required to carry out; I, on the other hand, have to describe only one of the objects, though perhaps the most important object, of the applications of that art. They form, therefore, two perfectly distinct systems of instruction, both having photography for their base, though it will be easily seen that there is quite sufficient subject matter for other analogous courses, completing the two which have been organized in France, and yet not clashing with them.

Knowing what we are doing in Paris, our professional brethren in England will be able to cite our example as a

precedent, and thus to overcome with greater ease the obstacles presented by the doubts and hesitation of others. For this reason, as well as in order to afford subject matter for reflection, I have thought it right to devote the whole of this letter to the question. All we who practise the art of photography belong to a noble international brotherhood; for my own part, I am as ready to do all in my power to further the interests of our art in England, as I am eager and willing to promote them in my own country.

LEON VIDAL.

HELIOGRAPHY, OR PHOTOGRAPHY IN THE PRINTING PRESS.

BY JOHN CARBUTT.*

THE Secretary having desired me to describe to the members of the Franklin Institute how photographs in printing-ink are made; before doing so permit me to read from an article prepared by me a short time since for one of our journals—"The Photographic Rays of Light."

In 1796 Alois Senefelder, of Munich, a musician and composer, was in the habit of using pieces of slate of limestone, on which to arrange his compositions before putting them on paper.

While so engaged he wrote with pencil, on a piece of this stone, a memorandum for his mother. Accidentally it fell into a vessel containing greasy water; to his astonishment he saw that every letter had become coated with grease contained in the water, and without affecting the other parts of the stone. This simple accident led him to the discovery of lithography, and little did he dream at that time of the marvellous results now obtained through the means of his invention, or that a chemically prepared surface would be discovered on which, by the action of light, natural objects, portraits, and works of design and construction would be drawn, which, when placed in the printing press, would yield, by a process of printing strictly analogous to his own, copies of such objects in permanent pigments.

In 1839 Mungo Ponton, of England, discovered that when paper coated with a solution of bichromate of potassium, and after drying was exposed to light under a drawing, that it received an image, of a brown colour, to preserve which it was only necessary to wash the paper in water to remove the bichromate not acted upon by the light. This, as far as known, is the first instance of a picture having been produced by the action of light on a body impregnated with a bichromate salt.

In 1854 Paul Pretsch made known his discovery that a film of gelatine and bichromate of potassium, after exposure under a drawing or other design to light, and after damping with water, would receive ink from a roller passed over its surface where the light had acted upon it, and refuse it where the light had not acted, owing to those parts having absorbed water, thus producing a printing surface strictly analogous to the drawing made by Senefelder on the lithographic stone; but Pretsch only used these inkable images to obtain a transfer to be laid down on stone to be printed from.

In 1855 Louis Poitevin made further advance in the use of a bichromatized gelatine film, by producing pictures in half-tone, but nothing of a really practical nature was accomplished by him at that time, as the films would bear but few impressions to be taken from them.

In 1865 Tessie du Motay, of Metz, France, made still further progress in half-tone printing from a gelatine surface, making use of copper plates as a support for the gelatine film, and from which seventy to eighty impressions could be obtained. The results were considered so good at that time that soon other experimenters took up the subject. Notably to Albert, and Obernetter, of Munich; Rye, of Denmark; Gemoser, of Berlin; Despaqui, of Paris; and Edwards, of London, is due great credit for the perfection to which heliography, light-drawing on a bichromized gelatine surface, has been brought.

* Read before the Franklin Institute.

Before describing the making of and printing from a heliograph plate I will briefly explain the similarity between a drawing by hand on a lithograph stone and a drawing by light on a bichromatized gelatine film.

To produce a design upon stone the artist makes use of a crayon or ink composed of materials of a fatty nature, on completion of which, if the stone is sponged with water, it will be seen that the water recedes from that portion covered by the design, but is readily absorbed by the stone outside of the design. On passing over it a roller charged with lithographic ink it will be seen to deposit on the drawing, but not on that part of the stone yet moist from the water, the greasy nature of the drawing attracting the ink, while the water repels it.

If a bichromatized gelatine film be exposed to light under a negative the result will be an image or drawing of a brown colour; on placing the plate supporting this film in water it will be seen that where the light has had full action, so as to reduce all the bichromate, it refuses to absorb water, and where the light has not acted it absorbs water freely and swells up. On blotting off the surplus water, and passing over it a roller charged with lithographic ink, it will be seen to deposit on the parts acted on by light, but refuses to deposit on the parts that have absorbed water, thus establishing the relation analogous to a drawing on stone as regard its acceptance or rejection of a greasy ink when in a moist condition. This is the relation produced by Pretsch's discovery in 1854, who, like Senefelder, never dreamt of the wonderful results now being daily accomplished by the aid of the camera and printing press. The drawing produced by light, first through the aid of the camera, and then by the negative thus obtained on the bichromatized gelatine plate, has a far greater intrinsic value than a drawing produced by the hand of man, be it ever so skilfully executed; for what can exceed the faithfulness with which photography pictures everything placed before the camera? Is not the drawing executed by nature's self?

Heliography—"sun-drawing"—then, is a process by which a picture is produced by light on a chemically prepared surface, from which, by mechanical means, prints in permanent ink can be produced with a celerity and cheapness, delicacy of texture, exquisite gradation, and faithful rendering of detail, that when limited numbers are required will give heliographic productions the preference over other processes of the sister arts.

I will now describe to you how the gelatine printing surface is produced. The support for the gelatine may be of zinc, copper, stone or glass: the latter, being best adapted to the purpose, is most generally used. To secure the gelatine film to the glass, so as to allow of a large number of impressions being pulled, it was found necessary to first coat the glass with a thin substratum of gelatine, albumen, and bichromate of potassium; albumen and bichromate; or albumen and silicate of soda. One or other of these preparations is essential to the production of a good printing plate; all are patented, and the patents for these and other improvements are owned by a company in New York known as the Artotype Company, who grant licences for working them. I hold the exclusive right for photo-mechanical printing for Philadelphia and twenty-five miles radius.

If one of the first two formulas for a first or cement coating is used, the plate after drying is placed, face down, on a board covered with a black cloth or velvet, and the light allowed to act through the glass for a time sufficient to cause that side of the coating next the glass to have become insoluble; it is then carefully coated with a solution of fine gelatine, containing fifteen to twenty per cent. of bichromate of potassium or ammonium, placed in a drying box, which is a rectangular one having cross bars, supplied with screws, on which the glass plates have previously been brought to an accurate level; and dried at a temperature varying from 110° to 130° Fah. When dry, the plate is ready for exposure under a negative; the usual printing-frame used by photographers is made use of, but as we cannot examine the

progress of the light's action as in photograph printing, the back of the printing frame is dispensed with, the plate being held in close contact with the negative by wedges placed under the cross bars, and we examine the progress of printing through the back of the plate. When all the detail of the image is visible, the plate is removed from the printing frame and placed in cold water, which dissolves out the bichromate not reduced by light. When sufficiently freed of the now useless bichromate it is allowed to dry. Before putting it on the press the plate is placed for a few minutes in a pan of water. It is then freed from water on the back, placed on the bed of a lithograph press, the surface carefully sponged, and dried with a soft cloth or other means. At this stage a faint image only is visible, and on passing over it a roller charged with a stiff ink those parts answering to the transparent parts in the negative will take ink with considerable freedom, while those parts answering to the half-shades will take much less, and where no light has acted will refuse ink entirely, from the film having so freely in those parts absorbed water. The printer now takes a roller similar in composition to those used in type printing, and charges it with the same or in coloured ink, but reduced in stiffness with oil or thin varnish, and with very little on the roller. Passing this roller over the plate it continues the inking up of the image until the faintest detail is made visible. A mask of paper having an opening of the size of the subject on the plate is laid over it, a piece of fine paper laid on, the tympan lowered, and with a light pressure pulled through the press, when, if all the conditions have been properly carried out, a print possessing all the delicacy of a fine photograph, but in a pigment as durable as that of the engravings of old, and with all the minuteness of detail and delicacy of light and shade that photography so faithfully gives us.

Heliographic printing is applicable to any kind of subject that can be photographed, and for publishers and manufacturers offers the best means of producing portraits, landscapes, machinery, and all kinds of manufactures; reproduction of engravings, paintings and original drawings, old manuscripts, &c.; and for illustrating art and manufacturers' catalogues.

Artotypes are executed in any of the permanent printer's inks, and at much less cost than photographs. To produce the best results special negatives are required to produce the printing plate, and care and skill are required of the printer.

HOULGRAVE'S GELATINE EMULSION.*

ONE of our most enthusiastic emulsion workers is Mr. George H. Johnson, Bridgeport, Conn., who, at this writing, is in the Adirondack woods, with camera and gun, making all the captures he can, health included. He took with him a new American Optical Company's 5 by 8 dry-plate camera, which he calls "the prettiest I ever saw." We hope to hear from him on his return. Meanwhile we publish the following for the use of emulsion workers.

In a recent letter to Mr. Johnson, Mr. Houlgrave, of Liverpool, England, gives further details in respect to the preparation of his gelatine emulsion as follows:

"In the first place let me explain that I always prepare my emulsion and plates in the evening, so that the times for performing the various operations are calculated for this. I employ the following utensils: two German glass beakers, one holding about four ounces, the other about half that quantity; an eight-ounce bottle with cork-lined stopper (glass stoppers are apt to stick); a tin canister with loose fitting lid, large enough to hold the bottle; a flat porcelain dish, seven inches by five inches; a tin tray about one and a half inches deep, and a little larger than the dish; an earthenware vessel with cover holding from six to eight quarts; a Bunsen burner, and a small spirit-lamp. I use Nelson's No. 1 photographic gelatine, as it does not require long soaking in cold water before it is ready to dissolve.

"It is quite essential that the bromide salts should be in excess, and for this reason I always test my materials before using them. Should this, however, be inconvenient, I should advise the use of rather less silver than I have prescribed in my formula; say 45 grains instead of 46 grains. In the larger beaker dissolve 26 grains bromide of ammonium in 7 drachms of water and 1 drachm of beer, and then add 10 grains of gelatine, pressing it under the fluid with a glass rod. Place the remaining 16 grains of gelatine in a separate vessel, and fill up with cold water. In the small beaker dissolve 45 grains nitrate of silver in 4 drachms of distilled water, and add three or four drops of dilute nitric acid (this is not necessary, but it helps greatly to keep the shadows clear).

"The beer above mentioned is prepared by mixing three ounces of ordinary bitter ale with one ounce of alcohol. This lasts a long time, and is always ready to use. The nitric acid solution is prepared by mixing one drachm of strong nitric acid with one ounce of water.

"Arrange the tin tray on any suitable support over the Bunsen burner; pour on water until it is about half an inch deep; place in the tray the eight-ounce bottle and the two beakers, and light the gas. Let the temperature rise to about 100° Fahrenheit, and then lower the flame. As soon as the gelatine in the beaker containing the ammonium and the beer is completely dissolved, pour into the same in one continuous stream the silver solution, at the same time stirring briskly with the glass rod. Transfer the emulsion just made to the eight-ounce bottle, rinse both beakers with a drachm of water, pouring it from one to the other, and finally into the bottle, and then give the emulsion a thoroughly good shaking. Next place the eight-ounce bottle containing the emulsion into the tin canister, into which a little hot water has been previously poured, loosen the bottle cork, and gradually raise the water in the canister to a boil over the gas-burner (this should not require more than five minutes). Remove the light when the temperature of the emulsion has sunk to 100° Fah., add the remainder of the gelatine, having first drained off as much of the water as possible, shake gently, and keep the emulsion at a moderate heat for a short time longer, in order to allow time for any froth which may have been formed to subside; then pour the emulsion into the flat porcelain dish to set, place this on any level surface perfectly excluded from light, and leave it till the next morning. Then fill the earthenware vessel with cold water, and plunge into the same the flat porcelain dish containing emulsion, and cover up, letting it remain in a cool place till any convenient time in the evening, changing the water once an hour or so before using the emulsion.

"When ready to coat the plates, take a strip of tin or brass half an inch wide and bend it into the form of the letter V; place it in the tin tray; fill the latter with water enough to cover the brass strip, and place in the tin tray the porcelain dish containing the emulsion; heat the water with a lamp until the temperature is not less than 100° Fah.; now drop in ten drops of the chrome-alum and glycerine mixture, filter the emulsion through a piece of fine sponge into a beaker, having a mark at two ounces, and should the quantity fall short of this, make up with warm water. Next coat the plates, and place them on a perfectly level shelf, and not disturb them until quite dry.

"The beaker containing the emulsion should be kept in warm water while coating the plates.

"Development.—The ordinary well-known alkaline development succeeds with these plates very well, and for portraits it is the one which I use; but for landscapes I very much prefer the following, for which the below-mentioned solutions will be required.

"No. 1.—Put four ounces of good carbonate of ammonium into a pint bottle, and fill up with water (this will take a day or more to dissolve).

"No. 2.—Pyrogalllic acid ... 60 grains
Alcohol ... 1 ounce

* *Photographic Times*.

"No. 3.—Strong liquid ammonia	...	1 drachm
Bromide of ammonia	...	5 grains
Water	...	1 ounce
"No. 4.—Alcohol	...	2 ounces
Water	...	1 pint

"Pour sufficient of No. 4. into a dish, plunge the plate to be developed into it, and let it remain there a minute or longer. Then mix the developer in the following proportions:

"One drachm No. 1; two drachms No. 4; six drops No. 2. Pour this quickly on and off the plate a few times, and then add more pyrogallic acid solution. This should bring out the image in all its details; if it does not do so, drop in from five to ten drops of liquor ammonia (No. 3). This will probably be sufficient; if not, rinse the plate with a small quantity of alcohol and mix a fresh developer, viz.:

Pyrogallic acid solution	...	5 drops
Liquor ammonia	...	2 "
Dilute alcohol	...	1 drachm

"Pour this on and off the plate, and add more liquor ammonia if required. Fix in moderately strong hyposulphite of soda (hypo, four ounces; water, one pint).

"Plates prepared and developed in this way are slow, the exposure with an ordinary landscape lens being from ten to thirty seconds; they are, however, extremely easy to prepare, are almost absolutely certain, and give the best results I have been able to obtain by the gelatine process.

"H. HOULORAVE."

Formula referred to in above is as follow:

Gelatine	...	26 grains
Bromide of ammonium	...	26 "
Nitrate of silver	...	46 "
Water	...	2 ounces

Chrome-alum Mixture.—Dissolve twenty grains of chrome-alum in one ounce of water, and then add half an ounce of glycerine.

INSTANTANEOUS PICTURES OF ATHLETIC EXERCISES.

THE San Francisco *Chronicle* has the following:—"On Thursday, at the invitation of Leland Stanford, W. S. Lawton, superintendent of the Olympic Club; Louis Gerichon, teacher of boxing; L. Brandt, the strong man of the club, and several other athletes, visited Meulo Park, Governor Stanford's country place, for the purpose of having their photographs taken while performing various athletic feats. The experiment was entirely satisfactory, the photographs being taken by the process so successfully employed in reproducing in the same manner the movements of running and trotting horses. In order to display as completely as possible the movements of the muscles, the athletes wore only brief trunks while performing. Mr. Muybridge, the photographer, had every arrangement made at the race-track for carrying out the work, and from ten o'clock in the morning until four o'clock in the afternoon boxing, wrestling, fencing, jumping, and tumbling followed in quick succession, and all of their intricate movements were instantaneously and exactly pictured. The first experiment was in photographing Mr. Lawton while turning a back somersault. He stood in front of the camera motionless, and at a signal sprang in the air, turned backwards, and in a second was again in his original position, and in his very tracks. Short as was the time consumed in making the turn, fourteen negatives were clearly taken, showing him in as many different positions. The eye cannot follow the rapid motions of a man turning a somersault, nothing but a gracefully revolving figure being presented; but the various positions assumed, as faithfully portrayed by the lightning-like movements of this new system of photography, show an amusing succession of positions which should cause a revolution in the matter of circus-hill printing. Mr. Brandt furnished a good study of muscular development for a sculptor, in putting at arm's

length over his head a dumb-bell weighing 150 pounds. Brandt possesses an arm, shoulder, and chest of a Hercules, and from the instant he grasped the bell at his feet until he held it motionless over his head, fourteen negatives were taken, showing what muscles are called into use, and how and when exerted. Mr. Gerichon and one of his pupils did some good boxing, and their rapid leads, parries, feints, counters, head tricks, and knee movements, were all caught and held by the photographer's instrument for the benefit of students of the manly art. One of the most interesting experiments was a running high jump made by Mr. Lawton. The jumping-gauge was placed at the four-foot notch, in order to give an easy jump, as in making it fourteen stout hempen strings had to be broken, as in photographing trotting-horses. From the camera to a point beyond the line on which the jump was made, a number of strings were stretched. The two base lines were only a few inches above the ground, and from them to the apex the strings were placed an equal distance apart. In jumping, Mr. Lawton's legs broke seven of the strings in ascending and seven in descending. The strings were tightly drawn, and so connected with the camera that as each one parted a negative was produced. After the athletic performances several photographs were taken of the athletes in various classic groupings. Governor Stanford will have each negative worked up to a cabinet-size photograph, and take one of each with him to Europe, where he will have two life-size oil-paintings made of each, one set of which he will present to the Olympic Club. A number of fast runners, members of the club, will visit Menlo Park soon, and be photographed at full speed."

Correspondence.

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DEAR SIR,—I regret not having an opportunity to reply at length to the several points in your leader of Friday last, with which you have associated my name. I must, however, refer to two of them, and, with your permission, say that from a lengthened experience I have come to the conclusion that it would conduce more to the interest of photographers if clients were legally to possess the power to have a photograph for which they have paid a valuable consideration enlarged or painted by other than the original photographer. I think custom has shown this arrangement to be both necessary and desirable, and therefore that which has been found convenient and beneficial under the *lex non scripta* should now be consolidated.

The other point I would refer to is as to design in the ordinary photographic portrait. There are certain firms—conducted by clever men of business—who claim no other title than that of portrait manufacturers, and whose operators are sometimes called upon to take eighty and ninety sitters each day. I would ask what possible opportunity is there for design in photographs taken under these conditions. If a photographic artist really puts design into his picture the Registration Act will give him all the protection he needs.

I am, dear sir, yours faithfully, ALEXANDER BASSANO.
25, Old Bond Street, December 2nd., 1879.

PAINTING STUCK TO GLASS.

SIR,—I have an oil-painting on canvas (no photograph) brought me to-day. It is framed with a glass in front, and the picture is stuck to the glass in the centre. Can you advise me how to detach it without injury to the painting? A reply in your next issue will oblige.—Yours truly,

ALFRED FREKE.

253, Bute Street, Cardiff, November 25th.

[As a rule, an oil-painting should not be framed with a glass in front; and certainly not in contact. It will require very delicate manipulation to remove it with our injuring the painting, and if the portion adhering is large, or includes any important part of the picture, its detachment should only be attempted by an expert. The introduction

of a drop or two of a solvent of the varnish would probably help to detach it, but there is risk of injury to the painting.—Ed.]

A PHOTOGRAPHIC CLUB.

SIR,—It seems to me by Mr. J. S. Tully's letters in last week's number, and in that of some five weeks since, that the two London Societies must be great losers in not having a gentleman with so varied an experience as a member, as I feel sure that were he a member, the few speakers, or readers of papers, would find their proper level, and the amateur or diffident speakers would take courage, and many members, who at the present time are deterred by the clique (?) so graphically described by Mr. Tully in his former letter, would come to the front and give us their experiences; and many "modest" speakers, be they members or non-members, would enlighten us with their ideas and suggestions.

It seems a great pity that it has not occurred to some one or two members of the Societies to propose Mr. Tully as a member, either subscribing or honorary; but I am rather surprised, seeing the great interest Mr. Tully takes in the Societies, that it has not occurred to him the benefit he might confer upon inexperienced photographers by paying a visit to one of the monthly meetings of, say, the Junior Society. But, joking apart, is not Mr. Tully rather behind time in his remarks and suggestions as to the formation, constitution, &c., of the Photographic Club, as the Preliminary Committee invited, in your issues of the 24th and 31st of October, the opinions and suggestions of all interested in the formation of this Club, and also especially invited their attendance at the meeting held at the Freemason's Tavern, on the 7th of November. To neither of these three and previous invites did Mr. Tully respond, and, therefore, they were compelled to arrive "at a conclusion (not hastily) as to its form of membership and entrance fee, subscriptions, &c." Had he also have read the report of the Preliminary Committee in your impression of the 21st ult., he would there have seen that the feeling was that it should, and the committee recommended it to, be made general, and open to all interested in photography. The recommendation was accepted by those forming the Club, and the Club is, therefore, open to all, irrespective of any Society, upon going through the usual routine of proposing, balloting, &c.

There is an old saying that you must creep before you run, and the Society in its present form, though members are being rapidly enrolled, is in but an infant state; the original idea, as stated in the report, having a far wider scope than can at present be carried out. Of its ultimate success and benefits, no one who has attended its weekly meetings can have a shadow of doubt; and many of the suggestions thrown out by Mr. Tully have already been fully discussed by the Executive of the Club. Even the question of an open night and paid lecturer was mentioned at the last meeting, and will come under discussion to-morrow night.—I am, dear sir, yours truly,

C. G. CUTCHEY, Hon. Sec.

62, Gracechurch Street, Dec. 2nd.

PHOTOGRAPHIC EXHIBITION.

SIR,—Permit me a few lines in reply to Mr. Spiller. I will be as brief as possible.

The responsibility of exhibiting the pictures in question rests entirely with the Hanging Committee. Six or seven pictures were sent (I forget the exact number), a portion of which only were hung, the others remaining in the box; the Committee choosing to hang the cattle subjects in preference. Moreover, they were sent "not for competition," the labels announcing the fact still remaining on the frames.

I will now return to the broad question at issue. Mr. Spiller, in common with the Council of the Society, appears unable to grasp the difference between the amateur photographer and the professional; the former incurs frequently

a great expense in framing and getting up his pictures for exhibition simply for the love of the thing, and in nine cases out of ten, (certainly in my own case), to do what he can to enable the Society to make as good a show as possible. It is therefore a very unwise and illiberal policy to lay a tax upon him further. The professional photographer not unfrequently uses the exhibition as a means of cheaply advertising, and here I think a charge might quite fairly be made to non-members, and he must be a niggard indeed who could take exception to it. Why I, together with very many other country amateurs, am not a member of the Society would occupy too much of your space to enter into, although I am sanguine that good would arise out of it, if the matter were fully ventilated in your columns.*

With respect to the charge for rental, I had no doubt that it was applied for in very many cases, but from the fact—as I understand upon good authority—of one or two photographers not having been applied to, it does look a little like partiality; and Mr. Spiller should hesitate before he says it is not true. But perhaps the application has fallen into wrong hands, as would appear to be the case with two letters of my own, one containing a remittance for some copies of the Society's catalogue to be sent to me, and another asking if it had been received, as the catalogues had not come to hand, to neither of which I ever received any reply. I had eventually to ask a friend, at some personal inconvenience, to call and purchase copies for me.—I am, sir, yours obediently,

JOHN VAUGHAN.

Oxford, December 2nd.

Proceedings of Societies.

GLASGOW PHOTOGRAPHIC ASSOCIATION.

A MEETING of the above Society was held in the Religious Institution Rooms, Buchanan Street, on Thursday, November 20th, Mr. JOHN URIE in the chair.

The minutes of last meeting were read and approved of.

The Secretary read a letter from Dr. Marwick, begging to be excused the honour of being enrolled Honorary President, owing to his residing in the country. A discussion on gelatino-bromide plates followed, resulting in Mr. Gilfillan promising to give a demonstration of his method of manipulation, and other members promised to bring plates for development, on condition that the Secretary would develop them before the members present.

The following gentlemen were then duly elected members:—Messrs. B. Wohlgenuth, T. Somers, D. Dow, G. C. Geric, J. Hampton, W. C. Ramsay, and R. A. Cruickshank.

Mr. BELL then exhibited a series of Irish and Scotch transparencies, by aid of the Society's lantern, accompanied by a brief description of each.

At the close, Mr. Bell was awarded a hearty vote of thanks for his services, as were also Messrs. George Mason and Co., for their kindness in lending the slides.

A vote of thanks to the Chairman brought the meeting to a close.

JAMES M'GRIE, Secretary.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of this Association was held on Thursday, the 27th ult., at the Free Library, William Brown Street, Mr. J. H. T. ELLERBECK, Vice-President, in the chair.

The minutes of the previous meeting were read and passed. Mr. Walter Wride and Mr. Joseph Stananought were elected members of the Association.

The Secretary then read the following

Annual Report.

"THE sixteenth annual report of the Society may be considered very satisfactory, as showing that there is no falling off in the number of members, there being now sixty-nine as against sixty-three last year.

"The meetings have been well attended, particularly when there has been any practical demonstration or exhibition of transparencies with the lantern, proving that the purchase of the lantern has been appreciated by the members, and necessitat-

* We shall have pleasure in permitting the discussion if our correspondent will initiate it.—Ed.

ing the consideration as to whether the Council would be justified in purchasing other apparatus which might prove useful in experimenting and demonstrating the various branches of photography.

"Owing to the unfavourable weather during the two summer months no outdoor meetings were held, but a very delightful excursion was made to Bromborough on the afternoon of Saturday, the 10th May.

"The following papers have been read:—‘Portraiture by Artificial Light for Amateurs,’ by the Rev. H. J. Palmer; ‘Some Experiments with the Gelatine Process,’ by H. Houlgrave; ‘Notes of Comparative Experiments with Gelatine Emulsions,’ by the Rev. H. J. Palmer.

"Novelties were exhibited by Mr. J. H. T. Ellerbeck, Dr. Kenyon, and others, and a comparative exhibition of three-wick *versus* two-wick lanterns was shown by Mr. Meacock.

"The gelatine processes being now the favourites of the members, numerous appliances have been shown in connection with that branch of photography, the ingenuity of the members being tried in producing means to secure rapid exposures, Messrs. Potter, Kirkby, Wood, Boothroyd, and Forrest each exhibiting varieties of rapid shutters.

"The presentation prints for 1878, and one for 1879, have been distributed to the members, and the thanks of the Society are due to Mr. W. E. Potter for the use of his negative of ‘Kirkstall Abbey,’ and to Mr. J. H. T. Ellerbeck for the one of ‘the Castle of Chillon.’ Both negatives were enlarged and printed in autotype by the Autotype Company.

"An associated *soiree* of the different societies of Liverpool connected with literature and art was held in St. George’s Hall, on the 19th of February last. This Society contributed to the interest of the visitors by exhibiting a variety of photographic appliances. The *soiree* proved a great success, and it is intended to have another on the 10th December, which, it is expected, will prove equally entertaining.

"The thanks of our Society are due for the presentation to them of the *Bulletin Belge, Journal of the Photographic Society of Great Britain*, and the *Autotype Notes*."

The Treasurer’s report was then read, showing a good balance in favour of the Association. Both reports were adopted.

Mr. A. Tyner, being unable to continue his office of Treasurer, received a hearty vote of thanks for his past services.

The undermentioned officers were then elected for 1880:—

President—J. H. T. Ellerbeck.

Vice-Presidents—W. Horsman Kirkby and W. Murray.

Treasurer—E. Twigge.

Hon. Secretary—William Murray.

Council—Rev. T. B. Banner, B. Boothroyd, T. Clarke, J. A. Forrest, W. King, Rev. H. J. Palmer, W. E. Potter, Ed. Roberts, J. W. H. Watling, E. Whalley, H. A. Wharmby, and L. W. Weber.

Auditors—H. A. Wharmby and L. W. Weber.

A vote of thanks was passed to the Library and Museum Committee of the Corporation of Liverpool for the use of the room in the Free Library.

Mr. W. H. KIRKBY exhibited a portable dark tent for use in changing or developing plates. The tent was made somewhat on the principle of a Howard tent, but was capable of being used for large plates. When mounted it was square instead of conical, and folded up into two waterproof trays, forming the base, which shut together similar to a book draught-board.

Mr. TWIGGE exhibited a very compact case containing everything necessary for developing plates when travelling.

Mr. KIRKBY showed a number of plates illustrating his method of testing the sensitiveness of different gelatine plates, and Mr. Wood exhibited a print of the interior of the Picton Reading Room taken while illuminated by the electric light, the exposure being ten minutes with a Ross’s No. 4 symmetrical on a Swan plate.

The Rev. H. J. PALMER then gave a lantern exhibition illustrating his summer tour in Switzerland; after which the meeting was adjourned to the 29th January next.

Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.—The next meeting of this Society will take place on Tuesday next, December 9th, at the Gallery, 5, Pall Mall East (the winter exhibition of the Water Colour Society being on view), when Mr. Leon Warnerke will resume his paper on “Actinometers” commenced at the last meeting.

PHOTOGRAPHIC SOCIETY OF IRELAND.—The next meeting of this society will take place at 8 p.m. on Friday, December 12th, in the Royal College of Science.

To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future.

THE VAPOURS OF ETHER AND ALCOHOL.—We have received a letter from Mr. R. J. Friswell, referring to the recent remarks under the head of “In and Out of the Studio” upon Dr. Zanetti’s observations on the *Hygiene of Photography*. As he points out, our contributor, usually very accurate and trustworthy, has in these remarks slightly tripped in referring to the vapour of ether as lighter than the atmospheric air. “Can your learned contributor,” Mr. Friswell says, “in an unguarded moment have written the specific gravity of liquid ether for that of ether vapour. Liquid ether compared with water has a gravity of 0.723. Now the formula of ethyl alcohol is $\text{C}_2\text{H}_5\text{O}$, and its density in the state of

vapour, referred to hydrogen as unity, is $\frac{46}{2} = 23$. Hence, being 23 times as heavy as an equal volume of hydrogen at the same temperature and pressure, it follows by a simple calculation that it is 1.6 times as heavy as an equal volume of air at the same temperature and pressure. The formula of ethylic ether is $\text{C}_2\text{H}_5\text{O}$.

This gives $\frac{71}{2} = 37$ times the weight of an equal volume of hydrogen under like conditions, or 2.5 times the weight of an equal volume of air. After all, therefore, Dr. Zanetti is right, and your contributor would have been more happy had he taken the trouble to find out that the ‘knave’ was not so ‘absoluto’ without good cause.” As we have already said, there is an undoubted slip, possibly arising, as Mr. Friswell suggests, from confounding for the moment the vapours of ether with liquid ether. The vapour of ether has a density of 2.58, a circumstance which lends itself to the ventilation of dark-rooms. We have in more than one article on this subject recommended a grating in the floor of the operating-room, through which the vapours of ether and alcohol falling, as they do, might pass away. We have also given a caution, which we may renew here, that when a bottle of collodion or ether is broken or knocked over in the dark-room it is dangerous to place a naked light on the ground to look for the extent of the mischief, as the light on the ground, or held low, would be most likely to come into contact with the heavy vapour. We are obliged to Mr. Friswell for correcting the *lapsus*; he, like Hamlet’s “absolute knave,” will have us “speak by the card.”

B. L. B.—So far as experience goes, gelatine plates possess very excellent keeping qualities, both before and after exposure; how long we cannot with certainty say: several months.

GELATINE.—We should recommend you to add your bad emulsion to your waste just as it is, and send to the refiner.

IGNORAMUS.—Captain Abney’s address is 3, St. Augustine’s Road, Kensington.

HIBERNICUS.—The address of the London agent of Messrs. Trapp and Munch, is Budge Row, Cannon Street, E.C.

NEMO.—The intensifier to which you refer was the iodide of mercury. It is made by mixing a solution of iodide of potassium with a solution of bichloride of mercury; the strength is not important. Take, say, a 10-grain solution of the mercury salt, and add to it a 10-grain solution of iodide of potassium, continuing adding until a precipitate is thrown down, which will be red iodide of mercury. Then continue adding the iodide solution until the precipitate is redissolved, and you have your intensifying solution. But bear in mind that negatives intensified with mercury are apt to grow more intense under the action of light in printing.

G. R. D.—Your ordinary gold toning solution would not answer well for toning transparencies. The solution should be stronger. We prefer about two grains of chloride of gold to the ounce of water, neutralized by chalk. The transparency should be thoroughly fixed and well washed before applying the gold solution. It is better to let the toning proceed until the transparency shows alike at the front and back, and is a fine pure black tone. A black tone is best for lantern purposes, but the image should be thin rather than dense.

B. F. R.—The reticulated network on the negative is the fault of the collodion, which has probably been made with weak solvents, that is, there is too much water present. Sometimes it is the fault of the pyroxyline. But in any case there is no remedy but discarding the collodion. It might be mixed with a new good sample, but care should be taken not to spoil the whole. There is no remedy now for the reticulated negative.

The Photographic News, December 12, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

COLOURED CHEQUES AND PHOTOGRAPHIC FORGERIES.—THE SUN'S RAYS AS A MEANS OF RESEARCH.—LOOKING BACK AND LOOKING FORWARD.

Coloured Cheques and Photographic Forgeries.—The London and County Bank has just followed the example of several other London banks, and caused to be printed over its cheques in part the name of the establishment in very small letters, the words being repeated over and over again so as to form a sort of pattern. This microscopic printing is in colour, and the reason of it is evidently twofold. You cannot erase a word or figure upon a surface made up of small print of this kind without erasing some of the tiny words as well, and as these obviously cannot be restored, there is no way of covering up such erasure; in the second place the printing in colour of such tiny letters is deemed sufficient to baffle any attempt to copy a cheque by means of photography. No doubt the bank authorities are right in their conjecture that it would be impossible to secure a copy of one of their cheques before the camera, printed as the document now is; but for all that we deliberately give it as our opinion that a cheque of this kind is not nearly so safe as the finely-executed cheques in plain black and white of the Bank of England. Any photographer who has taken an interest in recent trials of forgers in Paris, and has seen how successfully photography has been used in the imitation of coloured cheques, will be disposed to agree with us. Even the blue notes of the Bank of France have not escaped these *chevaliers de l'industrie*; and it is but a year or two ago that the French police were enabled to make a seizure. Just after the Franco-German War, when bank notes were exceedingly prolific with our French neighbours, there were large numbers of the spurious blue notes in circulation; and on the principle of setting a thief to catch a thief, the Direction of the Bank of France at once invoked the aid of photography to detect photographic forgeries. M. Gobert, a well-known member of the French Photographic Society, and an accomplished photographic chemist, was retained by the Bank of France as adviser, and it is, in a great measure, due to him that abatement of photographic forgeries in France is due. Many years ago, we remember, Mr. Spiller was called in as scientific referee in the matter of colour printing upon cheques, and gave much excellent advice upon the subject; but, unfortunately, our banks do not keep pace with the times, and what was impossible twenty years ago, is perfectly feasible at the present moment. The German authorities used to consider that they had altogether defied imitation by having recourse to very fine printing at the back of their bank-notes—similar to that on the cheques of the Cheque Bank, London and Westminster, London and County, &c.—this fine printing, which was in black, setting forth the severe penalties which would be visited upon those who endeavoured to forge such documents. This fine print, rather than acting as a barrier, resolved itself rather into a premium for, copying by photography. The bank-note was put under a microscope or magnifier, and the tiny printing thus enlarged, it could then be imitated by an engraver, and the photographer had simply to photograph the copy in order to produce the small printing. And so we take it that the microscopic printing in colour, rather than acting as a safeguard against the production of spurious cheques, will render the matter somewhat more easy. The colour—whether it is applied as a simple tint, or in the form of microscopic words—serves the purpose in a forgery of covering up defects in the engraving of the cheque. Rather, therefore, than adding to the difficulty of copying, it rather lightens it, since the work not being in pure black and white need not be so faultlessly executed. This is why the blue applied to the Bank of

France was no protection. Photographers, now-a-days, know a good deal about the sensitiveness of various collodion films for different colours, and are also well versed in what may be done by under-exposure and over-intensifying, and *vice versa*, and there are few tints or designs that they cannot copy one way or another; and by having recourse to combination printing, a skilled operator will overcome the most stubborn opportunities. But there would be no need, of course, in order to imitate a modern cheque to copy the minute blue or pink printing upon them. This would be produced of large size, a reduced negative executed with the type of proper dimensions, and impressed upon a collodion film, would be capable of yielding any number of impressions and in any colour; while as to fineness of the type and freedom from blurring, the result would simply be more perfect than the majority of cheques with which the public deal. Anyone who has seen the fine details of a map reproduced upon a collodion film, the delicate shading, and minute lines, will readily believe this, while we may point out that scarcely less perfect work is produced now-a-days by a phototype process. The finely executed drawings we see upon the *Graphic Programme*, and other theatrical publications, which are as delicate as anything done by engraving, are all prepared by the aid of photography, the original sketches, in the first instance, being produced many inches high. The lines are fine and black in the originals, and in the course of reduction become, of course, exceedingly delicate; thus it is that the drawings appear so refined beside an ordinary wood-cut. We have recited these facts to show how the graphic arts have improved of late by the aid of photography, and to point out that what might have been impossible some years ago is perfectly possible at the present day; and to this fact the Bank authorities should give attention. Certainly, microscopic printing in colours cannot be relied upon at the present moment as a safeguard against the forging of cheques; for we fully believe that a skilled hand would have more difficulty in counterfeiting the black and white document issued by the Bank of England than one in which a combination of colours is to be found.

The Sun's Rays as a Means of Research.—We see that M. Raoul Pictet, whose name is already well known in connection with the liquefaction of gases, is about to make use of the sun's rays in a research on the metalloids. He hopes to be able to disassociate the metalloids by bringing them into the focus of a huge metallic mirror, and thus concentrating upon them heat rays of a very high temperature. The experiment is to be carried out on a very large scale, and doubtless, if the experiment which is to take place in the clear atmosphere of Geneva, is conducted at a period when the full benefit of the sun is to be obtained, the result will be well worth watching. The experiment will be for many reasons unique, for a research of this nature has never been made on the large scale contemplated by M. Raoul Pictet. Now that Mr. Norman Lockyer and M. Victor Meyer have led us to believe so much in the matter of disassociation of the so-called elements, the research of M. Pictet will be followed with considerable interest by the scientific world, and we only hope that it may be instrumental in confirming one way or another the truth or fallacy of some of the theories that have startled us of late.

Looking Back and Looking Forward.—To the versatile author of "Looking Back" the readers of this journal are indebted not only for an entertaining series of papers, but for the communication of much dearly-bought experience. Many a photographer has rashly done what the author of "Looking Back" so graphically describes, namely, rushed into an undertaking without counting the cost; but there are few who can so vividly bring home their experiences to others. Whether it was photographing a Polar bear on its native ice in Iceland, or taking a servant girl's portrait somewhere in the Lower Road, Islington, our author's descriptions carried with them the stamp of reality, and there are few among us who do not imagine that we have taken that same

voyage out and home to the dreary Arctic Ocean, in company with a lot of noble swells, who did not seem to appreciate their voyage quite so much as they thought they would. Our author lets us see the thorns quite as much as the roses that beset his path; in fact, he lets us feel them at times, and hence it is that we entered so thoroughly into his joys and sorrows. Let us hope that the pen which has given such enjoyable entertainment, will not be allowed a long rest, but that it may soon be at work again detailing yet more interesting experiences. Our readers, we are sure, will be "Looking Forward" to such an end with pleasure.

FRENCH CORRESPONDENCE.

PHOTOGRAPHIC STUDIOS IN PARIS DURING THE SNOW STORM—TWELVE THOUSAND CELEBRITIES ENTOMBED—MEETING OF THE PHOTOGRAPHIC SOCIETY OF FRANCE.

The Snow Storm in Paris.—Within the memory of man there has never been such a fall of snow in Paris. Since Thursday last the storm has not ceased, and as yet it shows no signs of ending. The business and current life of the metropolis are in fact quite suspended. Everywhere means of communication are interrupted; the tramcars have stopped running; it is impossible to take either cab or omnibus; the posts are all behindhand, and the household supply is cut off; as regards fire and light we are already straitened, and are threatened with entire failure of both. Such, in a word, are the evils wrought by a persistent fall of snow, which defies all the efforts of the local authorities to remove it. Photographers have more especially had to suffer in this unparalleled visitation: they have had to endure, so to say, a second though quite unexpected invasion, which has vividly recalled to mind the horrors of the late siege of Paris. People are anxiously and generally asking when will this climatic severity cease. Of course, under such circumstances, customers are out of the question; no one who is not compelled will venture into the streets. Besides, all the photographic glasshouses are covered with such a deep layer of snow, that daylight can scarcely penetrate to them. There is not even light for the purpose of copying, which is generally the occupation of the assistants when no sitters make their appearance. Traversing the covered passages and arcades so numerous in Paris may give some idea of the state of things in the studios; they are like so many subterranean cities where, notwithstanding the display in the shop-window, life seems to have quite died out. The only sign of vitality is the faint flicker of gas, astonished at having to struggle with some daylight which enters at the sides. Above, it is all night; below, we have the pale light reflected from the snow, like moonlight in the wrong place. What a pity it is we cannot avail ourselves of photography itself to reproduce this effect! But then the practice of photography, the same as that of every other profession, is actually suspended in Paris. The only occupation open is to repair the damages caused by the snow, and to take measures for preventing those damages from being made worse; and this is no easy matter, since the police regulations forbid the snow which has accumulated on the roofs from being thrown into the street.

Entombment of Twelve Thousand Celebrities.—Moreover, several photographic studios have actually given way beneath the weight of the white shroud that has fallen from a quarter whence the photographer expects generally to get nothing but light. Among these constructions, that of M. Pierre Petit has had the most to suffer. This vast establishment includes several out-houses from 10 to 15 centimetres in length by 5 in breadth, where are kept the negatives of the portraits of a large number of celebrated persons still living. This collection, which has been growing since 1855, is well known to the editors of the illustrated journals, who often have recourse to it. About eight o'clock in the morning of Friday last, the glass roof, formed of thick squares fixed in iron frames, began to give under the weight of a solid mass of snow more than a metre in depth. M.

Pierre Petit, fearing the complete collapse of his glass-houses naturally proceeded to take efficacious measures against the destruction of his property, but found himself met at the outset by the regulation alluded to above, which prohibits the removal of the snow; though it is fair to suppose that so extraordinary a predicament had never been contemplated. The travels of the unfortunate photographer on his miserable errand seemed to him to be never ending: seeking only a simple permit for the removal of the snow, he was sent about from Peter to Paul. The Commissioner of Police declared himself to have no power, and referred him to the *Mairie*; from thence he was sent to the District Surveyor, and he was from home. Then he went to the Chief Engineer of the Board of Works, who politely informed him that he was not permitted to trench on the duties of the Way-warden; unfortunately, the latter functionary was engaged on works at a distance, and none of his under-strappers dared to take on himself to give an order in the absence of his chief. Meanwhile the danger was rapidly increasing, and all the time that poor M. Petit was running about for official help he was trembling with fear that his magnificent studios were being completely destroyed. At last, luckily for himself, he decided to infringe the law; so he returned home and set all his employés and workmen at work to remove the accumulations of snow. M. Pierre Petit is not yet aware of the amount of the fine he has incurred for having ventured to save his own property, but he finds consolation in the fact that he has been able to avoid the disaster which threatened him; his only loss will arise from the partial falling in of the out-houses. Even then, many of the negatives which were kept in boxes he has succeeded with some difficulty in dragging out from beneath the snow. In this way the existence of twelve thousand celebrities in effigy has been saved. Perhaps the number of probable victims has been exaggerated, but we will leave the responsibility for the announcement of the figures to the Editor of the *Petit Journal*, who has excited the imagination of the readers of his widely-circulated paper by an article bearing the sensational title of "Twelve thousand celebrities in the snow."

Meeting of the Photographic Society of France.—Notwithstanding the frightful weather, the Photographic Society of France had the courage to hold its ordinary monthly meeting. The agenda paper presented no subject of any great interest. M. Arsène Péligny exhibited some negatives taken on paper prepared with a mixture of castor oil and alcohol, instead of being waxed, as in the ordinary way, and M. Aimé Girard showed specimens of a pyroxylin which had been highly spoken of. Besides these presentations, only two communications worthy of notice were read, both on subjects which are familiar to the readers of the PHOTOGRAPHIC NEWS. The first was a description of M. Germeuil Bonnaud's process for photographic printing in colours, the second an account of the Luxograph. Some photographs taken by means of this latter apparatus, which is as yet but little known in France, were exhibited by the agent for the sale of the instrument in Paris; he was unable, on account of the bad weather, to bring the apparatus itself to the meeting. Let us hope, on behalf of the Luxograph (which would not be out of place in the present condition of the weather), as well as on behalf of the other subjects that are to be brought forward, that the next meeting of the Photographic Society of France may be favoured with a milder temperature. K. VERSHAFFEN.

A FEW HINTS ABOUT COMPOSITION LINES IN PHOTOGRAPHY.

BY EDWIN COCKING.*

MR. VAL PRINSEP, A.R.A., in an address delivered lately to the students in the City School of Art, said, that "many students spent year after year in acquiring the language of

* Read before the South London Photographic Society.

art, only to find in the end that they had nothing to say." Now I suppose that in photographic art the converse may be said to prevail, viz., that very many can say much without having studied the language at all; in other words, that the facility whereby a photograph of anything visible can be produced, has for a time almost shut out the necessity for acquiring any knowledge of the principles which obtain in fine art, but which can also assist the student in photographic art; and it must give unbounded satisfaction to those more cultured to find that at the present time the absolute necessity is felt for a true and conscientious knowledge of art principles, so far as it is possible to utilize them in the practice of photography.

The South London Society having adopted a very promising mode for encouraging such studies, a few hints which may help forward this desirable object may not be out of place.

And here let me digress (although it is closely associated with our subject) to notice some remarks recently published that there is "no design in photography." This is to me so utterly untenable, that I cannot understand how any person with even moderate powers of observation can venture to hold such an opinion. I contend that even the very commonest photograph of a figure or landscape you can find, bears upon its face the design of its author, because if in any the slightest degree he moves the object, figures, or moves his position in landscapes, it must be admitted that in so doing he had a design, and thus proclaims most unmistakably that he *did* what he was able to do from his standpoint, which probably may be at the "zero" of ability; and so some one a little more cultured sees what is bad, and then tries in his work to do better. Does not this individual thereby show that he also has designed something? Carry this principle out through a higher development of mental power, and you arrive at something still better in result, which, call it what you like, must still be *design*, viz., *something conceived and attempted to be carried out*.

It is our desire, then, to assist in promoting a closer attention to those rules which, instinctively, as it were, the masters in all art productions have adopted.

I have frequently shown that there is so little that is common in the mode of study to both the fine art student and the photographic art student, that it becomes difficult to lay down, or even suggest, lines of study, derived from fine art, which shall be easily understood and applied to photographic art. I shall therefore at this moment only attempt by a few remarks and suggestions to indicate a line of study which I think will be found to be useful.

In all pictures, whatever may be the position of the figures, certain lines will arise in the placing of such figures together which become more conspicuous than others, and these require to be composed in such a manner as to satisfy some instinctive artistic law, which requires harmony in the parts, besides illustrating the sentiment or subject of the picture. If the study be a single figure only, there is plenty of opportunity for exercising thought. As a simple illustration: suppose the line of some flowing drapery leans toward the right hand corner of the picture, some object giving a strong outline must be introduced in a similar way on the opposite side, viz., leaning towards the left hand corner. This will balance the first leaning line, by being constructed upon the pyramidal form of composition; then smaller lines can be again balanced by similar small lines on the other side, and these will then require some perpendicular lines to satisfy the instinctive law I have alluded to. Then there are the suggestive lines formed by small objects which can be introduced into a picture made up of *realities* such as a photographic study must of necessity be. This simple form of composition based upon the sloping sides of a pyramid is always the safest, and will be found to be the most instructive in practice. These and other lines of composition which will arise out of my subject thus become matters of harmonious arrangement. But we want to express some particular action or sentiment: well, then, the composing lines ought to suggest such ideas in another who sees the result without knowing it—

that is, instinctively; as, for instance, beauty, softness, repose, &c., can only be suggested or expressed by continuous lines running on with very little bending in them—in fact, no sudden turns or twists. If ugliness, violence, passion, &c., be desired, then arrange the lines angular, sudden, and opposed to each other. These are extremes: the study will consist in finding out just the *mean* between these opposites, which also expresses any sentiment between beauty and ugliness, at the same time the eye must be satisfied with a regular balance of parts.

You must all call to mind Rejlander's picture of "Homeless," which by its angularity of composition suggests the idea or sentiment he wished it to do; whilst at the same time the eye is satisfied with the equal balance throughout; and thus, to use another simile, the piece was set in a minor key, yet the laws of harmony were strictly and learnedly used.

It will be thus seen that in composition the prominent lines of the picture have not only to express something special, but have to be considered in harmonious relation to each other. So that the lines of the figure, the lines of the draperies, the accessories, the carpet, and even the decorations on the walls, must all be utilized for the purpose, and made subservient to the dominant idea.

Some time ago, in a paper I read upon art in relation to photography, I stated that there were published numerous designs (in outline only) by German and English artists, and I recommended that the photographic student should study these, and endeavour to find out the meaning of the lines composing the pictures. Also I would very strongly suggest that use should be made of those excellent German and French small wooded jointed figures for experimenting with for single and combined positions. Having settled the position, it is then easier to place the living model in the same pose, and thus much time is saved; and as the photographic art student does not require to train his *hand* in any way for the production of a high order of photograph, the time given to the *head* study can be utilized at once, and practically put before his taste and judgment. In this respect he has an advantage over the artist, who must patiently work out his ideas. At the same time, the photographer must never think that his work is therefore easier, and much good will arise if those who take part in the South London Society's competition will take all possible pains to produce works evidencing that thought and care have been bestowed upon their productions.

AN APPARATUS FOR THE CLARIFICATION OF GELATINOUS SOLUTIONS.

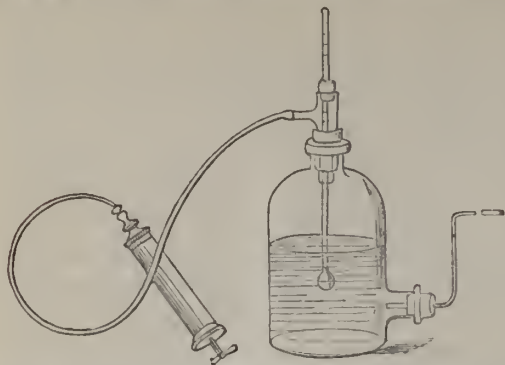
BY T. BOLAS.*

THE improved vessel for containing ferrous oxalate developer which Mr. Warnerke exhibited at the last technical meeting of this Society reminded me of an arrangement which I have found to be exceedingly useful in dealing with gelatinous solutions and other viscous fluids which tend to retain air-bubbles in suspension.

A bottle having two necks, one at the top and the other about an inch from the bottom, is procured, and to the lower neck there is fitted, by means of an India-rubber cork, a glass tube bent something like the neck of a coffee pot. If a gelatinous solution (not quite free from intermingled air-bells) be now put into the bottle, the necessary temperature being maintained by means of a warm water bath, the air-bells will gradually rise to the surface; after which the clear liquid may be decanted through the spout-like glass tube. In order to expedite the rising of the air-bubbles to the surface, the upper neck can be connected with an air-pump, so that the space over the gelatinous solution may be rendered vacuum, but in this case it is of course necessary to close the end of the spout by means of a cap or plug of caoutchouc; and it is convenient to adapt a thermometer into the neck in such a manner that the bulb of this instrument shall be immersed in the gelatinous liquid. Both these latter ends may

* Read before the South London Photographic Society.

be attained by fitting into the upper neck a glass tube a couple of inches long by half-an-inch in diameter, and provided with a side branch for connection with the air-pump ;



while the thermometer passes through the upright tube, where it is fixed by means of an India-rubber cork. A caoutchouc tube with coiled wire inside is convenient for connecting the apparatus with the air-pump, as such a tube does not collapse, in consequence of the pressure of the external air.

Here, then, is the complete apparatus ready for use, and I feel sure that anyone frequently using or experimenting with gelatinous solutions will find it exceedingly convenient in actual practice.

A FEW REASONS WHY PHOTOGRAPHERS SHOULD STUDY PRACTICAL CHEMISTRY.

BY THOMAS W. DRINKWATER, M.D., F.R.S., &c.*

In these days of thorough education no excuse is needed for such a paper as this beyond one for my inability I fear to make it interesting.

Technical education in all its branches is claiming the attention of those whose business and duty it is to teach, and before long we may hope that the reformatory wave that is now sweeping through the land may do some good, and that our college and university authorities may see their way to establishing chairs of technology in their respective schools.

Hitherto the systematic study of photography has been almost entirely neglected; in fact, I only know of one college where it is taught as a separate branch.

You will all, no doubt, agree with me when I state that photography is a most important adjunct to many branches of technological and mechanical industry, and to it we owe much of our knowledge of many sciences. If, then, you admit it to be a useful adjunct to science, is it not fair to urge for its study in a scientific manner?

You must remember that photography possesses its science as well as its art. The science can be taught, but the art cannot. It must come intuitively; and the object of my paper to-night is to ask those of you who already have this art intuitively planted in your souls to seek for the science, so that you may be better able to use those gifts which belong to you naturally.

How many photographers go through their daily work—exposing, developing, and printing—without either knowing or caring to inquire into the cause of the various effects they are producing. They know that iron when applied to an exposed sensitive plate develops in a mysterious manner the hidden image; but the reason of its so doing is as obscure to their minds as the latent picture was to their sight. Now this is not as it should be.

All genuine photographers that I have ever had the pleasure of knowing have always been ready and willing to seize and improve any mechanical portion of the work which may suggest itself to their mind; but how few are there who devote any attention to the chemical portion?

Looking at the photographer's work from one point of

* Read before the Edinburgh Photographic Society.

view, I cannot help comparing him to a chemist carrying on a series of experiments in his laboratory of the most delicate nature, in which the smallest divergence from the right path, or the slightest error in manipulation, or the least variation in the composition of his chemicals, will cause an utter failure.

We should all ridicule the idea of any but a skilled chemist carrying on such an investigation as this, and yet we know of hundreds of photographers doing precisely the same thing every day of their lives, without, in many cases, even knowing the names of the elements which enter into the composition of the compounds they are using. Do not think I am swinging the lash too freely. I am instancing extreme cases only to add greater force to my argument.

Of all the collateral sciences, then, which lend their aid to photography I place chemistry first—not because it is my profession and hobby, so to speak, but because the truly practical portion of photographic science is more ultimately dependent on chemistry than it is in light and optics.

So much in the way of general reasons. Let me now particularise a little more.

In the first place, I should recommend the study of practical chemistry as a matter of general education, for a profession which deals in science and art should be well educated. Without education what use can be made of inventive art? I fear very little. The seed may be there, the embryo may only need development, but if the soil, so to speak, lacks education true art can never flourish. In certain applications this education need not be scientific, but in photography there must be a certain amount of scientific knowledge acquired before the education can be called complete.

Next, as an aid to manipulation, I know of no work more calculated to teach a man the use of his hands than the practical study of chemistry, and the more limited the means the more benefit to be derived. It is not the man who is surrounded with a chaos of mysterious apparatus, in which polished brass and crystal shine conspicuously, that does the useful work. It is the student who, by want of more expensive luxuries, contrives and almost creates useful apparatus out of the ordinary surroundings of everyday life. Do not be discouraged, therefore, at the outset of your studies by the costliness of your apparatus. A few shillings will supply all your wants. With half-a-dozen test-tubes, a spirit or gas lamp, and a few reagents an operator can, if possessed of the necessary skill, carry on the most complicated analysis successfully. Working in this way, then, will give you manipulative skill, and I need not dwell on its value to the photographer. It must be too well known to you all.

As my next reason on the score of economy, and under this heading, one might find numerous applications. In the present day no fraud is so rife as adulteration. Food, drugs, and chemicals—nothing is spared by the hand of the adulterator. Many of the photographic chemicals are expensive, and offer every temptation for fraudulent substitution. So skilfully is this done in many instances that a mere inspection, even by the most practised eye, can hardly detect it, and it in consequence lies latent working all manner of mischief until brought to light by means of the chemist's test-tubes and reagents.

Adulteration may be either intentional or accidental. In food and drugs it would generally come under the former heading; in chemicals it would be more likely to come under the latter. The very process used in the manufacture of certain compounds may introduce an adulterant which the imperfection of subsequent treatment may fail to remove. As an example, take the preparation of copperas, or "sulphate of iron," to call it by a more correct and scientific name. To make this in a pure condition we would take pure iron, dissolve it in pure sulphuric acid, and evaporate the solution so obtained to crystallisation; but if the manufacturer adopted this process it would not pay. He takes iron pyrites as found native, consisting of sulphide of iron and copper, and roasts the mineral in a current of air, thus converting the

sulphides into sulphates by oxidation. The friable mass is thrown into water, and the solution crystallised in the ordinary way. What is the consequence? The sulphate of iron so produced contains a small amount of sulphate of copper. Not that this would act in any deleterious manner. This could not be called fraudulent adulteration. Now, if a photographer were versed in practical chemistry he could not only detect the adulteration but remove it by suitable means.

Perhaps nothing tends more to failure in photographic processes than impure chemicals, and yet in our ordinary photographic literature it is the subject least alluded to. You may say you buy your chemicals from a well-known and respectable firm, who could not for reputation's sake sell inferior articles. All very true; but it is a good rule never to take anything for granted if one has the means to find it out for himself.

Another example:—Every now and then we hear a good deal about the fading of silver prints, and the effect is said to be owing to the imperfect washing of the paper after fixing with the hyposulphite solution. This may be the case in many instances, but it may be due to other causes; and one source of such an evil has been very much overlooked both by writers on and practisers of photography, viz., the quality of the card or millboard on which the print is mounted. As many of you are, no doubt, aware, white paper and cardboard are during their manufacture submitted to the bleaching action of chlorine. After performing its office the chlorine must be removed, so as to prevent after-deterioration of the paper. To do this by means of plain water would be both a tedious and expensive operation, so the manufacturer brings to his aid some chemical which will at once convert the free chlorine into a soluble acid easily and quickly eliminated by washing. The compound most commonly used is hyposulphite of soda, under the technical name of "antichlor;" and as photographers we can easily understand how difficult it is to remove all traces of this compound from the pulp; consequently, if we submit to a chemical examination the generality of commercial specimens of white paper and cardboard, we shall find variable quantities of the much dreaded hyposulphite entering into the component parts.

Supposing, now, a print to be mounted on such cardboard, can we wonder at its want of permanency? The photographer should then be able to test his card mounts for himself, and thus avoid annoyance and vexation of spirit, besides, perhaps, a blot on his reputation as a skilful artist, which would be felt in the most tender part of all of us—the pocket. Without a fair knowledge of chemistry can this be done? I think not. We may learn to test for the presence of a few impurities in a mechanical and empirical manner; but let some occasion arise to use this knowledge in a way out of the ordinary beaten track, and where are we? Our knowledge is useless, and our reagents and test-tubes have no occupation. It requires that peculiar tact and ever-ready resource which is only to be acquired by the study of practical chemistry to overcome such a difficulty. One may be able to recognize hyposulphite when in its solid form, or even in solution, with a mere smattering of chemical knowledge; but when it is mixed with paper or some other unusual substance none but the man who has studied analysis practically and systematically can recognise it. I might bring many such instances under your notice if time permitted, but one such will, I am sure, be sufficient to make clear my meaning.

I have often spoken and argued with a view to procure the more general teaching of elementary chemistry in schools, if for no other reason than to make the scholars systematic. If a man be truly scientific he will also be systematic. They are synonymous terms—inseparable virtues. In a profession like the photographer's, where system is everything, where method and order gain the victory over irregularity and confusion, is it not more important that we should study a science which, if we already possess these re-

quirements, will strengthen and develop them in a more marked degree, whilst if we are not so fortunate as some of our brethren, will create, so to speak, the virtues which we lack? On this score alone I would strongly urge upon you to undertake the study.

In all trades or professions there is, or, rather, should be, a general desire for advancement—an ambition to do as great as, or greater, deeds than those who have gone before and left their names indelibly fixed on the tablets of honour and fame. Such an ambition can never be gratified by one who does not master every detail of his work. If we wish to be a Daguerre, a Lambert, or a Wortley, we cannot stand still. Let us once stand still in this world and we immediately commence a retrograde movement. Photography is no exception to the general rule. We must either advance or go back; there is no middle course at our option. We must disbelieve in the proverb of there being "nothing new under the sun." We must search for the hidden, invent for the future, and improve the past. Can all this be achieved without the practical application of chemical science? I venture to say—no.

If we look back and glance over the names of those who have advanced by their skill and knowledge the science of photography we shall find they have all been chemists. The majority can hardly be called practical photographers; in fact, it comes to this—that photographic science has been more advanced by men outside the immediate photographic circle than those within it. Why are matters thus? Simply because the ordinary photographer pays no attention to practical chemistry. He works in the daily rut, and never gives up any well-earned leisure time to the pastime (for he can make it a pastime if he choose) of chemistry. Surely the practical artist, with a knowledge of the thousand-and-one necessary details that are needed to produce a perfect picture, if he only possessed a knowledge of chemistry would be in a much better position to advance his profession than a man who had the chemical knowledge combined with only a smattering of photography.

A little chemistry and a great deal of photography can do more in this direction than a little photography and a great deal of chemistry. The chemist who undertakes an investigation of this kind comes into the field in the latter condition, and, in consequence, only slow progress is made; that is to say, comparatively slow progress. Now, if the photographer could enter on his researches in the former state, we might look to rapid advancement in every department of the science.

There are many other reasons which I might bring forward, but they are only of major importance individually and not generally or collectively, and therefore I will not allude to them. There are little circumstances constantly arising either in the dark room or studio when, if you only think for one moment, the importance of even a slight knowledge of chemistry will become patent to you.

I am not asking you to undertake a difficult or uninteresting study, but one which discloses fresh beauties and applications at every step of advancement. As you proceed with your study you will soon be made aware of its value, and may be enabled not only to advance your own science, but even give aid to the chemist. There are many phenomena connected with the chemical actions of light at present unexplainable, and which a scientific photographer could do more to elucidate than many a chemist.

Walking side by side in this manner, what mutual benefit might accrue? If I have succeeded in showing and convincing you of the value of my reasoning, as I trust I have, I am sure you will not require any stronger persuasion to commence work at once; and then, to use an old quotation, we may soon have chemistry and photography like—

"Two souls with but one single thought;
Two hearts that beat as one."

The Photographic News.

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WATER FOR NOTHING.*

"WATER for nothing" is the boon which Mr. Shirley Hibberd offers to every householder. Whilst corporations and municipal bodies are discussing the respective advantages of tapping remote lakes, of boring deep artesian wells, and of getting supplies from rivers with as little taint as possible of sewage or chemical refuse, with which to satisfy the domestic necessities of the millions, Mr. Hibberd points out that a perennial supply of the purest water is wasted, or worse. Worse, since its entrance into the ordinary sewers materially helps to complicate the question of the profitable dealing with sewage. As Mr. Hibberd observes, "millions have been expended on public water supply, but the results are unequal to the requirements of the case, and the supply must be increased by the expenditure of more millions."

The "water rate" is generally an unpopular tax, and is often very unfair in its apportionment. Mr. Hibberd points out a simple method of avoiding it altogether. Sheer ignorance of the boundless supply awaiting acceptance, without money and without price, can alone explain its long neglect. The eager reader is enquiring "Whence is this supply to be obtained?" And Mr. Hibberd's reply is, "From the heavens above us." It is simply the rainwater which we waste. Let no one turn away with disappointment or incredulity. The author is not one whose word can be slighted. Mr. Shirley Hibberd is best known as a high authority on horticulture, and one of the best writers of the day on the subject; but he is also well known as an original thinker and natural philosopher, and can well justify any project he places before the public. He shows that the rainfall in England is ample to meet the needs of domestic life, and that it is better fitted for that purpose than the best which is found in the ordinary water supply of the country at present. Properly received and stored it is *pure water*, and requires no certificates of its degrees of hardness, or the low per centage it contains of contamination. He also shows that it can be collected and stored in a state of purity by very simple and inexpensive appliances. We fear that we are to some extent diluting his clear and vigorous statement of the case by using our own words. We will, therefore, briefly quote the pamphlet, which we commend every one to read. He says:—

"It is certain every man has at his command, to a very great extent, the means of securing an abundant and perfect supply of water by the simple process of utilizing the rainfall. In this year of agitation on the subject the rainfall has been more copious than has been known for many years, and has been almost wholly allowed to run to waste. There has been 'water, water everywhere, but not a drop to drink.' Nor is the wanton waste in the rainfall the only sin society has to answer for in the pre-

sence of a bountiful Providence. The cost of its removal by means of channels and drains is enormous, and the addition of the rainfall to sewage proper renders the utilization of sewage impossible by reason of its unmanageable bulk and excessive dilution. Thus the rain that we refuse to catch and keep adds to the burden of the ratepayer by every drop that falls, and is made the means of conveying to the sea, to be lost for evermore, those constituents of the soil that are the causes of fertility. We are prospecting among the hills and boring into the depths of the earth in search of water, while, if we would but look to heaven, we should have plenty, and the Divine assurance of heavenly drink for evermore. The rainfall in London averages twenty-five inches. One inch of rain falling on an acre of ground is 2,622 gallons, and if there are twenty-five houses on that acre of land, the total annual rainfall is exactly that amount for each of them. Suppose only one-tenth of the total fall is caught and saved for household purposes, that is 2,262 gallons per house. The rainfall of the present year will greatly exceed the average, but exceptional circumstances should not be brought into the present consideration."

Whilst admitting the amplitude of the supply, many will at once demur to the quality. Associating the idea of rain water with the dingy fluid which, after washing dirty roofs, is stored in half-rotten casks at once foul in appearance and flavour, they will be disposed at once to dismiss the idea of its use in cookery, still more as a beverage, as would Mr. Hibberd himself. But let the objector ask himself whence the total supply of water at present consumed is obtained. It is simply rain water collected from a thousand hills receiving a thousand forms of contamination from which it requires purifying before it is accepted for domestic and other use. Let Mr. Hibberd again speak. He says:—

"The proposal to use rain water for any but the roughest purposes will surprise a few, and annoy many. Rain water is in bad repute, more especially in towns. Here and there we meet with an ill-looking water butt, from which may be drawn a sooty fluid that is less remarkable for its sootiness than for its offensive odour, and sometimes for the plenitude of mysterious life it contains in the shape of wriggling and jerking creatures, whose activities indicate that the water must contain something substantial for their sustenance. It might be better to be content with the water supplied by the companies than to drink such filth as this, but the filthiness is profoundly instructive. The companies travel far and incur great expenditure to discover springs and wells; they construct great engines and filtering beds, and in various ways make a business of obtaining and preparing water for domestic use. But when the householder enters into the business for himself he sticks up a secondhand rum puncheon, without a cover, in the full sun, exposed to all weathers as a contemptible thing, and in due time complains that it stinks! Well, a leg of mutton would do the same thing. If water is worth having, it is worth respectful and reasonable treatment, and when rain water obtains this treatment it is better in appearance, better in flavour, better for cooking, washing, and all other domestic uses, than any other water, no matter from what source obtained. This subtle element acquires contamination of some sort the instant it touches the earth, and the contamination is in exact proportion to the nature and solubility of the earth that constitutes the watershed, the watercourse, the bed of the lake and the reservoir. Hence, indeed, the endless diversities in the characters of waters, for wherever we travel we meet with water characteristic of the place—often too characteristic—so that it becomes a serious question how best to die with it, or live without it. The immense use of aerated waters and 'mineral' waters generally affords testimony to the unsatisfactory nature of the prevailing supplies. But it is a grave question whether these conduce to the health of those who consume them. This, however, is beyond dispute, that many forms of disease, not the least of the number being urinary calculus and goitre, are direct results of the habitual use of waters impregnated with mineral substances that are never properly eliminated from the frame. The danger of mineralization is made manifest in the constant endeavours of all concerned to obtain *pure* water, and the scrupulousness with which the per centage of organic and mineral matters in any particular water are noted and commented on. And when the purest water obtainable is obtained, it is but rain water with the least contamination possible. What else is the water of Loch Katrine? The reason of its purity is, that it is

* Water for Nothing. Every House its own Water Supply. By Shirley Hibberd, F.R.H.S. (London: Edinham Wilson.)

fed from a rock which yields but infinitesimally of its mineral constituents to the solvent powers of water."

The objectors, having admitted that the public water supply, through whatever source it may reach the consumer, is simply rain water, will not be altogether silenced. Some of them will urge that it is improved by the processes it undergoes, and the additions it acquires. They will affirm that by percolation through various inorganic substances it acquires traces of salts which are beneficial to the system; that by passage through chalk, it becomes charged with carbonic acid, and is sparkling and agreeable as a drink; also that the trace of organic matter it acquires is largely removed by oxidation as its rippling streams are agitated in contact with the atmosphere, &c. If it be true that the mineral additions which water acquires by percolation through various earths be beneficial or necessary, surely it is within the resources of science to provide them in the best proportion, instead of relying on the chance admixture, which must be uncertain in quantity and quality. And it must be better to have no organic matter to oxidize than to depend upon slow natural processes for removing it. The agreeable sparkling water which comes through the chalk brings with it more than an exhilarating gas: it brings insoluble salts which accumulate in the system, causing disease, agony, and death. These insoluble salts, accumulating in pipes and boilers, are common sources of explosion and great inconvenience, as well as of serious expense. In country districts where there is no public water supply, and pumps are depended upon for getting the water from shallow wells, fed by surface drainage, the case is worse still. The supply here is rain water filtering through all kinds of unnamed nastiness, of which typhoid and diphtheria are too frequently the result. It were a bootless task, however, to attempt to enter into detail of all the reasons why rain water in its original purity and cheapness should be preferred to that which is sophisticated and costly.

To photographers, Mr. Hibberd's pamphlet should be especially interesting. They require a great deal of pure water. And it is not too much to say that for lack of plenty of water, and for lack of water possessing the proper solvent power of soft or rain water, much of the fading which has made the art a bye-word is due. Every solution the photographer has to mix is better prepared with pure water than with the unknown compound known as "tap water," that is, water from the public supply. Distilled water largely used by the careful photographer is costly. Pure rain water will answer every purpose as well, and meet every want of the photographer.

"But how is rain water to be obtained pure?" many will cry. As it reaches mortals, it first washes the foul atmosphere of large towns; it next washes the dirty roof, and reaches the consumer charged with solutions of decaying leaves, bird droppings, soot, &c. This is true enough, and how to meet the difficulty is an important part of the aim of the pamphlet. The first shower that falls in a rainy period will, of course, wash the smoke-laden atmosphere and the house roofs of their accumulated dirt. This water will serve for garden use and other rough purposes. Mr. Hibberd shows there need be no difficulty in keeping the first showers and the subsequent rainfall separate. Vessels of proper capacity, receiving the first water and becoming full, may be made at once to act automatically in diverting the remaining supply to other reservoirs kept for the storage of pure water, which, after subsidence and filtration through a good filter, may furnish the supply described by Keats, which Mr. Hibberd adopts for the motto of his pamphlet—

"An endless fountain of immortal drink
Pouring into us from the heaven's brink."

If the thirty millions, or upwards, which form the population of this country, do not fairly deserve the character which Carlyle has given them of being "mostly fools," a revolution in the water supply must speedily follow the publication of this pamphlet.

THE GELATINE NEGATIVE PROCESS.

BY A. J. JARMAN.

IN the making of gelatine emulsion for sensitive dry plates, I have found that a great improvement is effected in the quality of the emulsion by employing gelatine of two different makes. I employ now half of Nelson's and half of Swinborne's, and by an improved method of drying can dry three gross of plates in four-and-a-half to five hours. So much success in the production of gelatine dry plates depends upon their being rapidly dried, and after a prolonged series of experiments, I cannot find any plan better than the slow method of emulsification. There is certainly something produced by the long continued emulsification in gelatine emulsion besides the change in colour of the silver bromide. There is undoubtedly some change in the gelatine which adds greatly to the sensitiveness; but what this change is, I am unable to say.

By using a strong solution of alum, *i.e.*, a saturated solution with one ounce of methylated spirit to the pint, the shadows clear up very nice indeed, and if intensification is needed by the negative being thin, use the following—

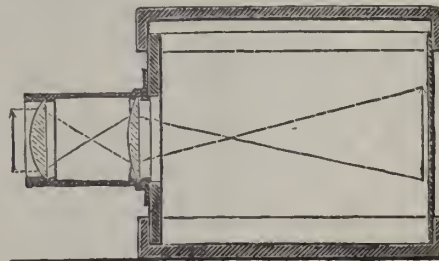
Mercury bichloride	...	...	60 grains
Water	...	...	4 ounces
Potass. iodide	...	...	140 grains
Water	...	...	4 ounces
Hypo sulphite of soda	...	...	40 to 60 grains
Water	...	...	2 ounces

Mix the potass. iodide solution with the mercury solution, shake well, then add the hypo. Filter; and place the negative in this mixture. A few minutes will suffice to give the required density; wash well after this, and dry without heat.

I hope the above hints may be of use to those who are using gelatine plates; any information that I can give from experience upon the gelatine process I always shall, as it is of no use hiding one's light under a bushel. I may also say to those who have written to me for plates made by my process, that they will see by an advertisement in the present issue of the PHOTOGRAPHIC NEWS that I have entered upon the manufacture of them.

COPYING VIEWS FROM NATURE.

A SIMPLE and portable camera, for enabling inexperienced persons to take copies of views from nature, has been patented by Messrs. Kershaw, of Sheffield. It consists of a box having at one end a lens or lenses, and at the opposite end a sheet or pane of clear glass, on which latter a sheet of tracing paper or other transparent paper or material is held or secured. The view of the object to be copied is projected by the lens or lenses on to the glass, and traced by means of a pencil or other convenient instrument on the sheet of tracing paper or other material employed. When a single lens is used, the view of the object as projected upon the glass or traced upon the paper is in an inverted position, but by the employment of additional lens, as shown in the figure, the view of the object



is again inverted, so as to be projected and traced in its natural position.

When a box is used of the construction shown in the drawing, the parts thereof are so fitted as to admit of their being folded together for the convenience of carriage. The top is first removed, and the lens or lenses with the holder having been detached from the end, the latter is removed, as also the glass end, and these two last-mentioned parts are laid in the top, and secured therein by a button. The sides, which are hinged to the bottom, are then turned down in succession, and the two parts connected together by bayonet fastenings. The box may, however, be modified in construction according to circumstances. For example, the box may be made so as to be susceptible of construction and extension after the manner of an ordinary camera-obscura, in order to afford facilities for adjusting the focus, or it may be constructed in any other convenient manner.

An apparatus for enlarging or reducing drawings, for lithographic purposes, has been patented by Mr. H. A. Dufrene, of South Street, E.C., and consists of an improved machine for uniformly stretching the rubber sheets upon which the drawing has been placed for enlargement previous to transferring it to the stone. The apparatus is constructed of an extensible frame, on the sides of which the edges of the india-rubber are fixed by a suitable number of hooks. The bars of the frame are cylindrical and surrounded with spiral springs, stretching or contracting with frame, and drawing in their movement the hooks so as insure a uniform tension. Movement is given to the bars of the frame by means of four screws, each having a right-handed thread at one end, and a left-handed thread at the other end, so as to draw apart or towards one another, two and two, the bars of the frame. Two handles placed on two adjacent sides of the stands of the apparatus connect these screws, two and two, by means of an endless chain, and allow of separately moving two of the parallel bars, or the two others, or the four at once. A scale placed on the stand shows the exact measure of the enlargement or reduction.—*English Mechanic*.

ON GELATINO-BROMIDE OF SILVER.

BY DR. VAN MONCKHOVEN.*

Development of the Image.—The image can be developed either immediately, or several days after exposure; but by deferring the development too long it will probably happen that the effect of the light has diffused itself over the whole film, and the plate in consequence will be fogged. For developing gelatino-bromide plates two methods are recommended, the one by pyrogallie acid, the other by a salt of iron. The first of these has the greatest number of adherents, who assert that when this method is employed the exposure need not be so long. Dr. Van Monckhoven, however, speaking from personal experience, maintains a contrary opinion, and believes that by the development with iron both in the gelatino-bromide, and the wet collodion processes, the shortest exposures are rendered feasible. He also declares that the images developed by pyrogallie acid are dull, and have a very deceptive colour as regards intensity, rendering retouching very difficult, while those developed by a salt of iron are equal to the best negatives taken by the wet collodion process. Then again, a solution of pyrogallie acid stains the hands, and must be prepared afresh every time of using, whereas one of iron can be employed for developing a large number of plates without renewing.

The following is Dr. Van Monckhoven's preparation of the iron bath: into the first of two milk-saucepans, each holding about a litre, he puts 200 grammes of pure iron sulphate, and pours on it half a litre of boiling water, stirring it with a glass spatula until all the salt be dissolved. Into this solution is thrown 100 grammes of oxalic acid, and the mixture is again stirred until the crystals of acid have disappeared. Oxalate of iron is thus formed in the hot liquid,

and will be precipitated in about ten minutes; at the end of that time the clear supernatant fluid is decanted off, and the saucepan is again filled up with hot water; this is stirred, the salt again allowed to settle for ten minutes, and the clear fluid drawn off as before; the same operation is repeated four times. During this last washing 250 grammes of neutral—not the common—potassic oxalate is put in second saucepan and dissolved completely in three-quarter litre of boiling water. This solution is then poured over the ferrous oxalate prepared in the first saucepan, the whole is well stirred and poured into a litre flask, filling the flask if necessary to the top with water, and taking care that all the yellow ferrous oxalate goes into the flask. Lastly, about 100 grammes of iron wire in 15 centim. lengths are placed in the flask, and after the solution has got thoroughly cool, it can be used the next day. Before actually using, it is filtered into a long upright bath, with as little access of air as possible, so as to prevent the ferrous being converted into a ferric salt. If it be necessary to use a horizontal bath, the developing solution must be poured back again into the mother liquor after each development. Every night, or when the work of the day is over, the iron solution should be poured back into the flask, and the latter filled up with a saturated solution of neutral potassic oxalate. It is also best to plunge the flask at night in very hot water, so as to dissolve some of the crystallised oxalate that has settled at the bottom, and thus to prevent the liquid from deoxidising in contact with the metallic iron kept in the flask. In order to preserve the properties of the iron developer, the solution should be maintained at a temperature not lower than 15° C., otherwise the neutral oxalate will crystallise.

To understand the reason for all these precautions it must be remembered that the salt which develops the image is the ferrous oxalate, and that this salt is only slightly soluble in cold neutral potassic oxalate; it becomes, therefore, necessary to introduce fresh ferrous oxalate in proportion as it is eliminated. The flask above mentioned contains a large excess, quite enough for a week's continuous work; but if the potassic salt be allowed to crystallize, it imprisons the ferrous oxalate, and we have neither a solvent nor the dissolved substance. Hence all the various difficulties that will be met with in developing; but it is easy to obviate them. (1). Let there be several separate baths. (2). Keep a flask of solution which has lost its properties in hot water until it has arrived at the same temperature. (3). Prepare every three days a new bath of ferrous oxalate.

The formula for the bath is not, however, yet complete. A solution of 100 grammes of ammonium bromide must be prepared, and from 10 to 50 centims. of it added to every litre of the solution of ferrous oxalate. The exact quantity is determined by experiment, as will be shown further on.

To develop a plate in an upright bath plunge it in by a quick but continuous movement, and raise and lower it several times on the dipper. When the bath is horizontal the liquid in it must be kept in motion. If these precautions be not observed, a mass of greasy spots would appear on the film, caused by the gelatine repelling the water, these will form round transparent spots in the image. When the plate has remained in the bath for half a minute the high lights will make their appearance; in the course of a minute or a minute and a-half, the details in the shadows will show, and at the end of two, or sometimes three, minutes, the image will be completely developed, as may be seen by the black parts showing through the film at the back. The plate is then thoroughly washed under a tap, and fixed as described below; the washing is best effected with rain water.

Now, in working this process, beginners will be sure to meet with many failures and disappointments. Very often the blacks of the picture come out well, but with the appearance of the half-tones a change takes place in the colour of the plate; it begins to fog, and the fog eventually covers the whole and obliterates the image. This fogging

* Continued from page 590.

is due to the red glass of the window of the dark room being too light in tint, or to its joints not fitting closely, or, as is more often the case, it is caused by defects in the dark slide or in the camera. If these faults have been carefully corrected, make another test by taking a plate which has not been exposed at all, and immerse it in the iron bath; if there be still a fog it is owing to the plate having been prepared or dried in a place which is not proof against the penetration of light. But if it be still not due to the latter cause, add from 10 to 50 cubic centimetres of ammonium bromide solution to every litre of the bath, shake it well, and let it settle for a quarter of an hour. Then plunge an unexposed plate into it, and if there be still fog observable, it must be either in the dark room or the drying room that the cause must be sought. It will be found that the addition of iron bromide does not diminish the duration of exposure; but it increases that of development. On the other hand, the high lights of the plate will be perfectly white by reflected light, and in fixing the image will be quite clear and free from fog. When, with all these precautions, the emulsion is liable to fog, the only remedy is to give a double or triple length of exposure in the camera, and to arrest the development before the fogging appears.

At the outset it was mentioned that there is great difference between one emulsion and another, but with a little practice their relative degrees of sensitiveness are soon discovered. The greener and more grained they are at the edges of the plate, the more rapid they are. These quick working plates require greater care in development, and the addition of more ammonium bromide to the bath than the others.

(To be continued)

Correspondence.

THE MIRAGE PHOTOGRAPHS.

SIR,—Several times, within the last few months, mention has been made in your journal of a photograph taken at Tenby, which was supposed to exhibit the mirage of a gun-boat lying at the time off Pembroke Dockyard.

As it would have been a curious and important record, had the mark in the photograph in question really been the result of mirage, I thought it was worth while to examine the matter.

The photograph is one of Tenby Church spire, and an analysis of the perspective of the picture shows that if the focal length of the lens employed was about eight inches (probably not far from the truth), the axis of the lens must have been elevated about 30° .

The mark supposed to be the ship is near the top of the spire, and must have appeared at the camera to have an elevation of about 40° , and an angular width of about 5° . The photograph is taken from such a position that the outer angle of the staircase turret appears to coincide nearly with the centre line of the spire.

Now the staircase turret is at the S.W. corner of the tower, hence the camera must have been pointing N.E. nearly. Pembroke Dock bears about 9° N. of W. from Tenby, and is about eleven miles off.

If the gun-boat was between 150 and 200 feet long, she would subtend about $10'$ when viewed broadside on at a distance of eleven miles. But Captain Parkins, Captain-Superintendent of Pembroke Dockyard, informs me that about six p.m. on May the 5th (the time when the photograph was taken) the gun-boat lay with her head N.E., i.e., with her centre-line in the same azimuth as the axis of the lens.

These facts have only to be stated to show that the mark on the photograph cannot be due to the mirage of one of the gun-boats at Pembroke Docks; but in reality, the possibility of its being mirage at all is precluded by the great altitude (about 40° , as before stated) at which it appears. As far as

I know, no mirage is ever seen with more than 2° or 3° elevation above the horizon at most.

One of your correspondents on the subject, Mr. S. Witners, mentioned a curious mirage seen by him in the West Indies; this he was kind enough to inform me might have been, according to his recollection, about three times the sun's apparent diameter, or about $1\frac{1}{2}$ degrees above the horizon.—

Yours, &c.,

Bramford Speke, *nr. Exeter.*

ARNULPH MALLOCK.

DEVELOPING GELATINE PLATES.

DEAR SIR,—Having seen Mr. J. Werge's non-actinic developing tray (which I consider very ingenious and useful), I thought it would not be out of place to let amateurs who, like myself, have not much time to spare, but develop their plates in the evening, know what I have used ever since I worked gelatine plates. I have constructed a dipping bath out of ruby glass, with an ebonite top lined with black velvet, and in which is fixed a silver dipper. This little piece of apparatus I find answers very satisfactory.—Yours truly,

JAMES STAMFORD.

PS.—I may add that I use the ferrous oxalate developer, and use a caudle for a light.

THE PHOTOGRAPHIC CLUB.

SIR,—Referring to Mr. Cutchey's letter in answer to mine, there is no necessity for me to be a member of the two London Societies, because I have been for some years. The Parent Society (the father of the infant Photographic Club, no doubt) I seceded from after the president affair; the South London on account of the distance, and because the business did not have an all-absorbing interest for me. And I partly suspect the fact of the starting of the Photographic Club was because it was found the general business of the society did not come up to their ideas of what it should be, and the whole affair was stale and unprofitable. I merely offered what I did respecting the Photographic Club as suggestions—"without charge," or with the idea of filling any office attached to it. My suggestions presumably were right, or why did the committee act upon them?

If Mr. Cutchey had long been a member of the two London Societies he would have known I advocated discussion *en famille*, so that many matters would be talked over by members who would feel great diffidence in mounting a platform and holding forth for the first time; it's like standing on the banks of a river undressed, waiting for the resolve to plunge in. It wants some courage, especially if the "depth" is uncertain. The Photographic Club will arrange all this, I hope—*nous verrons*. Now, referring to "clique," surely Mr. C. was not an exhibitor at the Society's annual exhibition, but was, like me, an outsider looking on.

This reminds me of a good joke. An operator applied to a friend of mine, a photographer, for a situation, enumerating his different capabilities for out-door work, or, as he said, outside work, at which he was unapproachable—in fact, he was an exhibitor at the Society's Photographic Exhibition. Well, my friend, thinking he had got a good man, before finally engaging the party paid a visit to the Photographie Exhibition, and, after some searching in the catalogue and on the walls, he discovered one little miserable view. He was quite decided. The party called next day. "Well, sir," said he, "did you see my outside work?" "Yes," was the reply. "And what did you think of it?" said he. "Well, my opinion is," said my friend, "that you are a rank outsider, and you won't suit me." "Ob! but it was not hung right," said he. "You ought to be," said my friend. And the fellow went away, grumbling that he ought to have had a medal.

But I am digressing. I certainly did not understand it was finally settled that anyone could join the Photographic Club without being a member of one or other of the Societies. I read that it was proposed to be so, but it was referred to the committee. I am, therefore, happy to hear

their resolve, and for one appreciate their freetrade policy; and, in conclusion, I hope to find a proposer and a seconder for membership of the Photographic Club.—Yours respectfully,
JAMES SYRUS TULLEY.

[We have cut out some good joking from the commencement of our correspondent's letter, because of the probable misconstruction and possible annoyance which might result.—ED.]

Proceedings of Societies.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The annual meeting of this Society was held on the evening of Thursday, December 4th, the Rev. F. F. STATHAM, M.A., in the chair.

The minutes of a preceding meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Messrs. Rogers, Ackland, and Maxwell.

The meeting then proceeded to the election of officers, and after the passing of a resolution to the effect that, in future, the number of vice-presidents be limited to six, the following officers were elected:—

President—F. F. Statham, M.A., F.G.S.

Vice-Presidents—G. Wharton Simpson, M.A., F.S.A., Jabez Hughes, Frank Howard, W. Brooks, P. Mawdsley, and E. Cocking.

Committee—Messrs. Adkins, Bolas, Bolton, Cutchey, Cowan, Dunmore, Warnerke, and York.

Hon. Treasurer—F. A. Bridge.

Secretary—H. Garrett Cocking.

The SECRETARY then read the following report:—

Secretary's Report.

"In presenting the annual report of the South London Photographic Society for the year 1879 your committee have to congratulate the members upon the increased vitality shown during the past year. A step has been taken in the right direction by some of the younger members coming forward to read papers and to show new apparatus, &c. One of the principal matters of the past session has been the adoption of Mr. E. Dunmore's scheme for an artistic competition (for the members only) to be held monthly. Your committee hope that this competition will not only advance the prestige of the Society, but also tend to the promulgation of artistic culture amongst the members.

"The annual Lantern Exhibition for the display of slides by members and others was held at the January meeting, when Mr. F. York exhibited slides taken by himself of the Paris Exhibition, a description being given by Mr. McCall. The eighth annual Technical Exhibition was held in November, and your committee are pleased to state that it was a great success, both as to the number of visitors and the quantity of appliances shown.

"The following papers have been read during the session:—

"'Gelatine Plates in the Studio,' by Mr. J. T. Hazard; 'Demonstration of his Platinum Process,' by Mr. W. Willis, Jun.; 'Imitation Porcelain Transparencies,' by Mr. W. J. Auckorn; 'Artificial Lighting,' by Mr. R. V. Harman; 'Finance,' by Mr. F. A. Bridge; 'How To Take a Negative by Artificial Light for 1½d.,' by Mr. Brittchank; 'Artificial Light,' by Mr. Archer Clarke; 'Continuing Action of Light in Carbon Printing,' by Mr. E. Foxlee; 'Reflectors and How to Make Them,' by Mr. W. Harrison; 'Future Usefulness of the Society,' by Mr. Brittchank; 'Experiences with Gelatine Plates,' by Mr. H. Garrett Cocking; 'Photographic Signs of the Times,' by Mr. W. Cobb; 'Artistic Competition,' by Mr. E. Dunmore; 'Improved Photographic Apparatus,' by Mr. L. Warnerke; 'Hints on Competition,' by Mr. E. Cocking; 'Clarification of Gelatinous Solutions,' by Mr. T. Bolas.

"Photographic apparatus, &c., have been shown by the following gentlemen:—Messrs. Bridge, Ayres, Harrison, Henry, Bolton, Wratten and Wainwright, York, Cowan, Warnerke, Stringfellow, Brooks, Ackland, Clarke, Werge, Lane, Edwards, Jones, Heuderson, and Wilmer.

"In conclusion, your committee trust that with the important increase in the number of members, and the revived interest shown in the matters connected with the Society, the ensuing session will be one of marked activity, and the result great usefulness to its members."

The rules for the art competition will appear in our next.

The TREASURER's report was then read, and showed, instead

of a deficit, as on some former occasions, a balance in hand from last year of £3 9s. 2d., and with the subscriptions in advance for the coming year, a balance of £14 9s. 8d., a state of things on which he congratulated the Society.

Mr. BOLAS then read a paper on the "Clarification of Gelatinous Solutions" (see page 591), and demonstrated the method.

After some conversation,

Mr. E. COCKING read a paper on "Some Hints on Composition" (see page 590).

The PRESIDENT made some observations on the importance of a consideration of the laws of composition in relation to the proposed artistic competitions.

After votes of thanks to the president, treasurer, and other officers, the proceedings terminated.

BRISTOL AND WEST OF ENGLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

The ordinary monthly meeting was held at the Museum, Queen's Road, on Wednesday, 3rd December, Mr. T. DAVEY in the chair.

The minutes having been confirmed,

Mr. H. A. H. DANIEL said that at the last meeting he gave notice of a proposition he was about to make, viz., that from that date all ordinary members joining the Association shall pay an entrance fee of one guinea.

The CHAIRMAN asked why Mr. Daniel considered an entrance fee necessary; he asked, so that the reasons might be gone into and discussed.

Mr. DANIEL replied that one reason was, that every year the balance of the books of the Association was a much closer thing than he considered should be, it being quite an uncertain thing whether the balance was in favour of the Association, or due to the Treasurer. Secondly, there were occasionally purchases the Association would like to make, such as a portfolio for contributed prints, &c.; and whereas he did not doubt that the members would, if asked, readily give donations for any special object of that kind, still he did not consider that special "whips" now and again were satisfactory or good for any society.

Mr. WALTER STEPHENS said he thought that in scientific and art societies the entrance fee and subscription were identical as to amount, whereas a guinea would be double the subscription; he presumed also that the corresponding members would not be included in the resolution.

Mr. E. BRIGHTMAN, as Treasurer, corroborated Mr. Daniel's assertion that sometimes there was a balance of a few pounds due to him, but that it was made up at the following meeting when the subscriptions were paid. He bore out Mr. Stephen's remark as to the amount of the entrance fee and subscription being the same, by instancing the Loudon Society.

The CHAIRMAN asked Mr. Daniel if he would alter the amount of entrance fee in his resolution from one guinea to half a guinea.

Mr. DANIEL replied that if that were the general feeling, he would be pleased to do so, and requested that the resolution be read so. He noted Mr. Brightman's remark as to the balance due to him being made up when the subscriptions were paid, but as that was paying a past year's deficit from a new-year's income, he held that it was not sound financing, and thought it was all the stronger reason for an entrance fee being instituted.

The CHAIRMAN then put Mr. Daniel's proposition to the meeting, it having been seconded by Mr. Brightman, and it was carried unanimously.

The HON. SECRETARY announced that the remaining business of the evening was the exhibition and discussion upon the negatives and prints resulting from the out-door meetings.

The CHAIRMAN said he had been amusing himself by some attempts at making lantern slides on gelatine sheets, and for first attempts thought he had been tolerably successful; he hauded a few round for exhibition. From their appearance the chief difficulty seemed to be that of causing the slides to dry perfectly flat, and not puckered. Apart from this, the Chairman was congratulated on such successful "first attempts."

Mr. BRIGHTMAN stated that he had one or two prepared by Mr. Woodbury, and they were perfectly even and flat, and showed very well in the lantern.

Mr. DANIEL also possessed one prepared by that gentleman, but did not find it had preserved a perfectly flat appearance, but he believed Mr. Woodbury had much improved on those, and he should be very much interested in knowing what Mr.

Woodbury had done in the matter, and knew the members would also feel pleasure in hearing anything that might be communicated on the subject.

Mr. BRIGHTMAN exhibited some gelatine negatives taken on Wratten and Waiwright's plates, and, although pleased with the process, he said he could not say he was altogether satisfied with it. He did not find it possible to give so full an exposure to the foreground and dark parts of a picture, without spoiling the distance, as we could with the wet process.

The Hon. SECRETARY then handed to each member present the following final and complete list of medals and conditions for the International Exhibition in Bristol next year, and was pleased to be able to state that already applications were rapidly coming in for full particulars, also intimations of exhibits.

"Bristol and West of England Amateur Photographic Association International Exhibition."

"The Council of the above Association beg to announce that they intend to hold an Exhibition of Photographs, Photographic Apparatus, and Appliances in the Galleries of the Academy of Arts, Queen's Road, Clifton, Bristol, to be opened on Friday, 17th December, 1880, continuing open till Saturday, 15th January, 1881.

"Apart from photographs for competition, the Council will esteem it a favour if those who have any interesting examples of the history and progress of photography, will kindly lend them for exhibition.

"All pictures, apparatus, and contributions of any kind will be insured at the expense of the Association.

"Special care will be bestowed on the hanging, so that all pictures shall, as far as possible, be done justice to, to facilitate which, the whole of the extensive galleries above referred to have been retained.

"Conditions.—There will be no charge for wall space; but there will be a small universal entrance fee of five shillings to be paid by each exhibitor in competition.

"All pictures for exhibition (except as below stated) must be sent mounted and framed, with the artist's name and address on the back; the titles of the subjects and process by which produced may be neatly affixed to the front of the pictures. On no consideration will the name or address of the artist be permitted on the front, as such will appear in the catalogue, and no pictures in Oxford frames will be admitted.

"Pictures from India and the Colonies may be sent by post, unmounted, and the Council will undertake to have them mounted at the cost of the exhibitor, such expenses to be deducted from the proceeds of the sale of the pictures. Nevertheless, where possible, the Council would recommend exhibitors sending their pictures ready framed, according to their own tastes. All unmounted pictures must be delivered by November 1st. The most direct route from America is from New York by the 'Great Western Steamship Line' direct to Bristol, with which Company special rates for exhibitor's packages have been made.

"The Council undertake to unpack, repack, and return all exhibits remaining unsold; all carriage must be paid by the exhibitor. Every care will be taken of the exhibits, but at the same time the Council will not hold themselves liable for any untoward accident that may occur, with the exception of loss by fire, which is specially provided for.

"The Council will undertake the sale of exhibited pictures at the usual commission of ten per cent.

"Photographs coloured by hand will be excluded from competition.

"The hanging committee will reserve the power of rejecting any pictures.

"Each exhibitor must fill up the annexed form A, and forward it to the Hon. Sec. not later than November 1st.

"All pictures intended for exhibition must be sent carriage paid, to arrive not later than December 1st, addressed 'International Photographic Exhibition, Academy of Arts, Clifton, Bristol,' form B being sent as a letter of advice.

The following is the list of the medals which will be awarded for the best and second best pictures in the various classes, and to be decided on the opinions of five gentlemen, being two eminent artists and three well-known photographers, three of the judges being outside the Association.

"1. A Gold Medal for the picture or series of pictures which, in the opinion of the judges, possesses the highest degree of merit, irrespective of size or subject.

"2. One Silver and one Bronze Medal for the best and second best landscape or series of landscapes of $8\frac{1}{2}$ by $6\frac{1}{2}$ or under.

"3. One Silver and one Bronze Medal for the best and second best landscape or series of landscapes above $8\frac{1}{2}$ by $6\frac{1}{2}$.

"4. One Silver and one Bronze Medal for the best and second best portrait or series of portraits of $8\frac{1}{2}$ by $6\frac{1}{2}$ or under.

"5. One Silver and one Bronze Medal for the best and second best portrait or series of portraits above $8\frac{1}{2}$ by $6\frac{1}{2}$.

"6. One Silver and one Bronze Medal for the best and second best genre picture.

"7. One Silver Medal for the best enlargement of any subject and by any process, provided it be the work of the exhibitor.

"8. One Bronze Medal for the best transparency or series of transparencies.

"9. Four Bronze Medals, to be awarded according to the discretion of the judges, for improved apparatus, materials, processes, or other meritorious productions.

All communications must be addressed to the Honorary Secretary, H. A. H. DANIEL, Avonmead, Leigh Road, Clifton, Bristol."

After a little further discussion the meeting stood adjourned, till June 7th.

EDINBURGH PHOTOGRAPHIC SOCIETY.

The second ordinary meeting of this society was held at 5, St Andrew Square, on the evening of Wednesday, the 3rd December, Mr. W. H. DAVIES in the chair. There was a large attendance.

After the Secretary had read the minutes of the past annual meeting, a council meeting, and several committee meetings, which were approved of, the following were unanimously elected ordinary members of the society:—Messrs. James Elliot, Thomas Ross, Thomas Kelly, W. D. McCombie, Alexander Birchan, George Murray, William Rankin, Patrick F. Sinclair, James L. Strang, and Miss C. Archibald.

A recommendation by the council that there be a presentation print for the current session was unanimously approved of.

Dr. T. DRINKWATER then read a paper entitled "A Few Reasons why Photographers should Study Practical Chemistry" (see page 592). At its conclusion—

Dr. THOMSON said he had to thank Dr. Drinkwater for his paper recommending the photographer to make himself acquainted with the general principles of chemistry, and to ground himself more thoroughly in that department of the science which had a bearing on his own profession; at the same time he should acquire manipulative dexterity, in order that when any new process was introduced he might with confidence put it to the test of experiment. Such a paper was much needed, and would produce a beneficial effect, no doubt, on many of the members. It was the want of the little amount of scientific knowledge that had retarded the progress of photography. Most professional photographers, had they been more conversant with chemical pursuits, would by this time have been able to lay aside their silver baths, and depend entirely on their dry gelatine plates for producing as good, if not better, work than they had been doing. Of course, a great deal of experience was required in the proper development of the dry plate; but when this had been studied, and practised for a much shorter time than was necessary to give confidence and success in the wet process, the result would be all that could be wished. Besides, with his knowledge of chemistry, and possessing dexterity in manipulation, he would have no difficulty in preparing his own plates, and thus avoid the heavy expense of buying them. Five shillings would make sixteen ounces of emulsion, and that quantity would readily coat eight dozen of full-plate size.

Mr. CRAIG-CHRISTIE remarked that no words could be sufficiently forcible to impress the importance of a knowledge of chemistry to the photographer, who was constantly engaged in delicate chemical manipulations. A practical acquaintance with the ordinary routine of a chemical laboratory would enable him to rationally combat many of the difficulties that are constantly arising, and thus avoid the sudden breakdowns which occur with the ordinary mechanical worker. He would also be enabled to grasp at once any new departure in the various manipulations, and his knowledge would readily supply him with chemical equivalents that might be needed in an emergency.

Mr. THOMAS PRINGLE had derived a great deal of information from attending a class of analytical chemistry. Such information was especially useful at that time, when everybody of note was adopting the new gelatine process, the manipulations of which were entirely different from those of wet collodion. There were many different developers recommended, and most likely the best had yet to be found. Wet collodion had been tried and found wanting in those very points where gelatine was peculiarly efficient.

Mr. JOHN ANNAN said he trusted a practical application would be made of the valuable paper of Dr. Drinkwater, and suggested that the council should take the subject into consideration, and bring up a report and recommendation as to the best means to be carried out for securing so desirable an object. Some years ago he had made a proposal that the Society should secure rooms fitted with suitable appliances, where members could meet and test the various new processes and modifications of old ones that were continually cropping up, so that their value might be ascertained and adapted to every-day practical work. Having such rooms, a class for the study of chemistry would be less difficult to organize and more likely to succeed, being linked on to what concerns the professional photographer's daily work. They were very much indebted to amateurs and experimentalists, who find their daily pleasure rather than pecuniary profit in their experiments, and it would be well if the professional and amateur were more frequently brought into contact with the view of overcoming technical difficulties and developing new processes. Such meetings would stimulate progress in the art, and if their Society possessed suitable rooms its usefulness would be most materially increased.

Mr. ALEXANDER MATHISON next exhibited a collection of platinotype prints from a number of his own choice negatives. In doing so he explained that they were the first and only examples of the process he had ever produced, and paid a high tribute to the extreme simplicity and certainty of the manipulations, stating that he had not had a single failure.

Mr. W. T. BASHFORD drew attention to the rich, velvety blacks and the general warmth of tone that prevailed in many of the prints, pointing out that, in the examples on the table, the thinner negatives appeared to produce the warmest tones.

The CHAIRMAN directed attention to the capacity of the process for rendering truthfully strong contrasts when in juxtaposition, noticing as a remarkable example the purity and delicate detail of the white linen cap worn by an old fishwife standing in an open doorway, the latter being an intense black with a rich, juicy transparency.

Mr. J. M. TURNBULL, after expressing his unqualified admiration of the prints on the table, said that, in his opinion, platinotype was one of the processes that would materially affect the future of photography. He pointed out how slow photographers as a body were to take advantage of any new process. In the early years of photography, the bath process itself had to fight its way into notice. For many years the beautiful collodio-bromide process was only worked by a few individuals, and even now many were unacquainted with it. For years the carbon process languished ere it took any recognised position. Again, how tardy had the gelatine process been of coming to the front. After hanging fire for years, it was only now beginning to work its way into general notice. Photographers had long sighed after an instantaneous process; they had long had one within their reach, but, until recently, had failed to recognise it. In the same manner they had urgently desired a permanent printing process which, without the manifest disadvantages of pigment printing, should be strictly permanent, and simple and certain in its manipulations. The platinum process supplied all these requirements, but yet, up to the present, it had not taken the position which it certainly deserved. The manipulations were simple in the extreme, not the least of which was that the printing could be watched as it progressed; while the results, for certain classes of work, were simply unapproachable by any known process. Mr. Willis's platinotype had been the subject of very full demonstration in that room some two years ago, by Mr. Rodgers, of St. Andrew's, and specimens by it had been brought up, exhibited, and universally admired from time to time, and he considered it one of the great duties of a society such as their's to bring up such a matter again and again, until its great merits were fully recognised.

A hearty vote of thanks to Dr. Drinkwater, Mr. Mathison, and the Chairman terminated the proceedings.

Talk in the Studio.

A NEW NOVEL BY MR. BADEN PRITCHARD.—We are glad to hear that Mr. Baden Pritchard, whose name is so well known in the photographic world, is engaged in writing another three volume novel. The first chapters appear this week in *One and All*, under the title of "Georgo Vanbrugh's Mistake."

To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future.

T. BROWN informs us that he prefers iron to pyro for development, and asks us to give him a formula for iron developer which will give rich vigorous images on opal. Iron is undoubtedly a more pleasant and convenient developer than pyrogallie acid; but for some purposes it is not so good as the pyro. Developing on opal prints on opal or plain glass is one of those purposes for which iron is inferior to pyro development. Iron gives a grey metallic image, whilst pyro gives a warmer and more organic image, admitting more readily of toning, and having a richer and more brilliant effect by reflected light. If our correspondent be still anxious to try iron, let him make a developer with 12 grains of the protosulphate of iron and 30 minims of acetic acid to an ounce of water.

O. J. ELLIS.—The description you give of the negative from a plate of your own preparing shows it to be fogged, and if you gave it, as you state, the same exposure as a wet plate, the fog is easily accounted for, as it must be seriously over-exposed. A gelatine plate, as a rule, will not require more than a fifth part of the exposure required by wet collodion; in some cases we have seen good results produced by one-fiftieth of the exposure of a wet plate. We cannot undertake to say which is the best method of preparing gelatine plates. Some very able workers endorse the method described by Dr. Van Monckhoven in his paper before the French Society. Our volume for the past year is nearly full of discussion on the subject, and our forthcoming YEAR-BOOK will contain an ample summary of the most important facts and experiences.

M. F. R.—If the exposure is right, the use of a large proportion of pyrogallie acid will give you sufficient intensity. Remember that the colour is non-actinic, and that a negative which looks thin will often be found to possess sufficient printing density. There are various modes of intensifying gelatine negatives. It may be done with silver and pyrogallie acid, or, as some prefer, with iodide of mercury.

L. G.—There is no advantage in using the negative bath very strong; 40 grains to the ounce of water is the extreme limit of strength which can be used with advantage. As a rule, we should say 30 grains in summer and 35 in winter answers well. It is wise to use a large quantity of solution in the bath. A small bath and small quantity of silver solution are undesirable, as the solution in such cases soon gets out of order, and works with uncertainty. Do not often filter. Use a dipper which does not permit the plate to go to the bottom of the bath, and frequently remove floating acum from the surface of the solution—always, in fact, before commencing work.

A WOULD-BE ARTIST.—The rules of composition, and of light and shade, so far as definite rules can be laid down for pictorial effect, are all defined and published. You will find full information on the subject in Mr. Robinson's work on "Pictorial Effect in Photography." A knowledge of such rules is essential to an artist, and will materially aid him in producing good work; but an instinctive perception of beauty is also a necessary pre-requisite. The desire to produce artistic work is often an indication of the existence of the latent power which may be developed by study, observation, and effort.

F. R. S.—Daguerreotypes were occasionally tinted by applying suitable colours in a state of very fine powder. Any touch of water colour to such a delicate surface was destructive. 2. Nicéphore Niepce and Daguerre worked in different lines and with different materials. The sensitive agent chiefly used by Niepce was asphalt, whilst the triumph of Daguerre was secured with iodide of silver. 3. The photography of the day is essentially of English origin. To Talbot's labours the production of negatives and multiplication of prints was due. The photographic properties of bichromate were discovered in England, and gelatine plates are due to England. Germany has done little in photographic discovery, and America no more, but both countries produce very fine work.

F. H.—The chief fault in the photographs sent is due to imperfect lighting. The sitter should be lighted by a strong light from one direction, instead of being flooded uniformly with diffused light. If you are compelled to work in the open air, you must use screens, so as to get the lighting something like that of a studio. Screen one side of the sitter and overhead. There is also a tendency to fog. Use an older sample of collodion, and a weaker solution of iron with more acid. Let us know the result.

W. B. C.—There is an excellent little book on the magic lantern by Mr. Chadwick, which will give you the information; and another good one published by the Stereoscopic Company. Several correspondents in our next.

The Photographic News, December 19, 1879.

PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PROFESSOR HUXLEY ON TECHNICAL EDUCATION—A STEAM BURNISHER—CHRISTMAS CARDS.

Professor Huxley on Technical Education.—Professor Huxley has lately been doing good service in calling attention to the absence of technical education now-a-days. Since it is no longer the custom to serve apprenticeships, the younger generation has a difficulty in receiving a technical education, for the trades that require such apprenticeship are daily becoming fewer. For this reason, while we now make it a *sine qua non* with every girl and boy that they should possess book knowledge, technical education receives little consideration. This, Professor Huxley considers a dire mistake, and many of our readers will agree with him. It is often of the greatest use to a lad to know something of practical mechanics, and to be able to handle tools with address; he never knows till after life how valuable such knowledge may be to him. Thus, many a photographer, for instance, who can ply a chisel and saw, will have congratulated himself for having familiarised himself with tools when a lad, for he has no need to go to a carpenter or cabinet-maker to drive a screw or dovetail a box. It was the custom till very lately—it may be so still, for aught we know—for German princes in a reigning family to pay particular attention to technical education, not merely for the purpose of being able to help themselves occasionally, but in case they might, by some unlucky turn of fortune's wheel, find themselves in the predicament of having to earn their own living. The idea has something romantic about it—the possibility that someday, perhaps, the prince may have to turn peasant—but it is none the less a common-sense view of matters. The reigning Grand Duke of Saxe-Weimar is, if we remember rightly, a turner or cabinet-maker, and enjoys the reputation of being particularly clever with the lathe. He, as well as his august brethren, were taught a handicraft by competent masters, and were required to go on with their mechanical education at the same time as they pursued book studies. Professor Huxley wants something of the sort to be followed in the ordinary education of our boys at home. The City Companies have plenty of money for the purpose, and since apprentices have almost ceased to exist, so far as City trades are concerned, he argues that no better use than that can be made of the money. Professor Huxley proposes the establishment throughout the country of institutions similar to the *Ecole des Arts et Metiers* in France, and the *Polytechnicum* in Zurich, or of the nature of the Royal Industrial College at Berlin, where our friend Dr. Hermann Vogel, it will be remembered, occupies a chair as professor of chemistry and photography. In London, the wealthy Guilds, as we know, were established as much to look after the good training of apprentices as anything else, and a part of their rewards, therefore, might well be devoted to fostering technical education. In fact, Professor Huxley goes farther, and, as far as London was concerned, expressed a belief that "it would be a scandal and a robbery if a single shilling were asked for out of the general revenues of the country for technical education. The City of London Guilds possessed enormous wealth, which had been left to them for the benefit of the trades they represent. If the people did not insist," said Professor Huxley, "on the wealth being applied to its proper purpose, they deserved to be taxed down to their shoes. It would be well if those who had charge of these matters in the City of London would understand that they were morally bound to do this work for the country, and he hoped, if they continued to neglect the obligation, they would be legally compelled to do it." These are strong words to use, no doubt, but we may be sure that they are earnest and well-meant. Something must be done to supply the place of the technical education which our forefathers re-

ceived in their apprenticeship, otherwise a time will come when book-learning, and that alone, will be acquired. The photographer, more perhaps than most people, is interested in the matter, for with him the value of a technical education is paramount. There were plenty of defects, no doubt, in the old system of apprenticing youths to a trade, but the system had its advantages notwithstanding, and we ought to find a way to compensate us for those advantages. Mr. Huxley, we are glad to hear, tells us that the City Guilds have been to consult him on the subject, and hence we may have a chance of seeing some of his practical views carried out. He would not have the present teaching of the School Boards interfered with, as the boys do not have too much of it at present. An extension of the kindergarten system, in which infants are taught to use their hands quite as much as their brains, by the imposition of simple mechanical tasks, and which includes the use of tools and the knowledge of elementary mechanics, would be a good beginning, doubtless, for he could not but think that the evil of not giving hard-work in the elementary schools was, after all, very great. Although it was a great thing, he said, to make skilled workmen, yet it was more important still to make intelligent men. The City Guilds have already taken steps for the teaching of chemistry and physics, and a professor to that end has already been appointed; but it is not so much a scientific as technical training of which our youth stand in need, as Professor Huxley very forcibly points out.

A Steam Burnisher.—We had the pleasure the other day to witness the performance of a steam burnisher, which, if it is not too costly a piece of apparatus, should be useful to photographers at large. The apparatus in question was constructed by Mr. John Calder, of Plumstead, who seemed to have given the subject considerable attention, and has certainly devised a very effective instrument. The burnisher is of steel, and has a fine polished surface some five inches broad and twelve inches long; it is hollow, and, steam being passed into it, the metal is maintained at a high temperature, while there is at the same time no chance of an injury arising to the mounted photograph by over-heating. The supply of steam is generated from a little boiler, which is maintained at a proper heat by a Bunsen burner. The boiler is simply connected with the burnisher by a piece of flexible tubing, which may of course be more or less long according to circumstances. The burnisher when at work is attached to an ordinary rolling-press, and the pictures are made to scrape against the highly-heated and highly-polished steel surface. The only drawback, to our mind, was the price, which for a twelve-inch burnisher was said to be £1; but in a large establishment, probably, the cost would not be of much importance. The steam burnisher certainly does its work well.

Christmas Cards.—At last photographers are getting alive to the production of Christmas cards, and there is something else on sale at the stationers' besides pictures of snowed-up cottages with the everlasting robin on the roof. If people are to send pictorial cards to one another at Christmas time, it is desirable that the missives should present some little variation, especially as nowadays purchasers spend a good deal of money on such trifles. To pay sixpence or a shilling a-piece for Christmas cards is no unusual occurrence, and we may be quite sure that anything good and new in the way of these festive pictures will find a ready sale. One of the most charming photographs we have seen is that of a yacht caught in full sail, "A prosperous voyage" being written underneath. The card is more suited for New Year than Christmas, but is a happy embodiment of hope in the future. Little summer landscapes, of which many may be seen on the new Christmas cards, form likewise pleasant missives, for it is not unwelcome to be reminded of warm sunshine and bowery foliage at this time of the year. Photographers may rely upon it that any happy notions they may put forward in this way will be eagerly welcomed by the public at this season of the year.

ON GELATINO-BROMIDE OF SILVER.

BY DR. VAN MONCKHOVEN.*

Development with Pyrogallic Acid.—Herr Obernetter, of Munich, who has practised the gelatino-bromide process with great success, prefers the pyrogallic acid developer to that of iron oxalate. He prepares first two solutions, the first of 1 part potassium bromide in 10 parts water; the other of 1 part pyrogallic acid in 10 parts alcohol. These solutions are kept in flasks provided with pipettes graduated to contain cub. centimetres. Besides these he has a pure and concentrated solution of ammonia in a dropping bottle.

To develop the plate (without first immersing it in water) it is placed flat in a porcelain dish containing a mixture of—

Bromide solution ...	...	2 cub. centim.
Pyrogallic acid ...	...	4 „
Water ...	...	250 „
Ammonia ...	...	10 drops

The constituents being added in the order here indicated. At the end of half a minute, the deep black parts ought to appear; if they appear before that time, 5 to 10 cub. centim. of the bromide should be added; if not in that time, 5 or 10 drops of ammonia—not on the image, but at a corner of the dish to which the contents are collected by inclining it. In this way an under or over exposed plate may be corrected.

The developer is allowed to act until the required degree of intensity has been attained, bearing in mind that this intensity will be diminished by fixing. To judge whether the plate has been sufficiently developed, take it out of the bath, and look at it by transmitted light. Afterwards the plate is thoroughly washed in water, and then fixed.

Fixing the Image.—This operation must be carried on in the dark, and is effected by means of a 15 per cent. solution of sodium hyposulphite. The process of fixing takes a longer time in proportion as the film is greener and more grained. It is not so simple an operation as in the wet collodion process, on account of the hyposulphite solution being liable to turn a dirty yellow colour (owing to traces of iron oxalate retained by the gelatine) with which it stains the film. For this reason, a considerable quantity of the fixing solution should be prepared beforehand, so as to replace any which may be observed to discolour. A concentrated solution of hyposulphite may not be employed, or blisters in the gelatine film will be the immediate result.

After fixing, as well as after developing, the plate must be thoroughly washed. The best way to effect this is to hold it under a tap of spring water for about half a minute, then to let it lie in a dish full of water for at least a quarter of an hour, and finally to rinse it a second time for a few seconds under the tap. Without taking this precaution, the image will pale under the subsequent operation of intensifying, or, if it be not necessary to intensify, the varnish with which it is afterwards protected will split off again. The film is sometimes found to frill or to detach itself from the plate either during development or after washing and fixing; to avoid this inconvenience, plunge the plate before development in a solution of chrome alum (10 grammes to the litre), then wash it in water for some seconds, and finally immerse it in the iron bath.

Intensifying the Image.—Some persons recommend pyrogallic acid and silver nitrate for intensifying the gelatino-bromide plate, but, in consequence of the silver combining with the gelatine, this gives rise to a deep red veil. Others use mercury bichloride dissolved in potassium iodide, but this causes the plates in a short time to turn the colour of chrome yellow. The following method will be found to answer well:—Reduce to powder, in a mortar, 20 grammes of mercury bichloride, dissolve it in a litre of distilled water, and throw in 20 grammes of potassium bromide and stir till dissolved. Again, dissolve separately 20 grammes of silver

nitrate, and 20 grammes of pure crystallised* potassium cyanide each in half a litre of distilled water; mix the two, and a light precipitate of silver cyanide will be found to settle at the bottom of the flask, and should be allowed to remain there.

The operation of intensifying may take place either when the plate is dry, or while it is still wet from washing after the fixing; in the former case it must be dipped for half a minute in water. First lay the plate in a open dish full of the mercury bichloride solution, and leave it there for a length of time proportional to the intensity required. The extreme limit has been reached when the plate becomes white all over. Then wash it well under a tap of spring water. Now plunge it into the second solution; if it has been kept only a short time in the mercurial bath it must be left only for a few seconds in the cyanide solution, but it may be allowed to remain a little longer if its immersion in the bichloride of mercury has been a more extended one. In any case the white colour produced in the mercurial bath will disappear, which can be well seen on examining the back of the plate. On no account may the plate be left too long in the silver cyanide, for the latter reacts in its turn on the black parts of the picture, and reduces their intensity.

Finally, the plate is again thoroughly washed and then dried. It may not be passed again through the hyposulphite solution, for that would destroy the intensity of the image altogether. The successive action of the mercury chloride and of the silver cyanide is to produce in the deep shadows of the picture a violet silver chloride which is not affected by light. The effect of this intensification is simply superb—quite equal to that of wet collodion plates.

Retouching and Varnishing.—Some photographers retouch the plates before applying the varnish; they find that the mat surface of the gelatine film lends itself easily to retouching either with the pencil or the stump. Others varnish the plates before retouching. As regards varnishing, it is effected in the same way as with collodion plates, care only being taken not to apply the varnish until all trace of moisture has been removed from the gelatine by exposing the plate to a gentle heat.

SOMETHING ABOUT SKY-LIGHTS.

BY O. W. OSBORN.†

THAT part of a photograph gallery which should receive the most attention, and be conducted in the best manner and on the most scientific principles, is the sky-light. Yet, notwithstanding the many hints and suggestions which have been offered through the medium of the practical and other journals pertaining to our art, the great mass of photographers in this country are using lights which are so defective and illy constructed as to render it impossible for any, save the most skilful workman, to produce even passable work. I agree with Mr. Inglis, of Montreal, Canada, whose article on lighting appeared in the June *Practical*, that "the large top-lights that are now so common in nearly every gallery, as well as a big reflector, are abundantly sufficient to make photographic art little more than a caricature." I do not advocate the use of as much side-light as can frequently be found in a great many galleries, for the reason that, when a picture is perfectly lighted, the light should proceed from an opening at the top of the side-light, and at the lowest part of the sky-light, and the sitter placed as far from the side-light as the height of the same, or a little farther would do no harm, in order to secure the necessary angle of light.

A front top-light, proceeding from an oblique direction, is the best which can be employed where the highest class of work is attempted to be done. A small light is always best for single figures and bust pictures, while a large light is essential for groups. I never could see the policy

* Continued from page 597.

* Note that fused potassium cyanide will not answer the purpose.
† *St. Louis Practical Photographer.*

of putting a side-light in an operating room which would reach to within eight or ten inches of the floor, and then be compelled to completely stop out three or four feet of the lower part, in order to secure artistic work. No light should be admitted through the side-light that does not proceed from a point above the level of the sitter's head. Nothing could be worse than to open the top-light and close all but the lower part of the side-light. Yet I have seen that method attempted by photographers who enjoy a moderate local reputation. To avoid cross-lights, it is imperative that the effective bundle of rays which illuminate the head of the sitter proceed from a point about forty-five degrees from the perpendicular and from a few feet in front. Curtains, or more properly screens, should be placed upon both top and side-lights, so that as much or as little light may be admitted as is thought necessary. In the arrangement of the screens, both overhead and on the side, care should be exercised that they be placed on rollers—the top ones fastened at the highest point of the skylight, and those on the side should be fastened at the point nearest the floor. An arrangement of screens after the above fashion is the most rational and simple of all, inasmuch as they can be made to perform all the functions required of such devices.

In case it is required to make single heads under a very large, high light, I would recommend that they build an arrangement inside of the operating room like this.—Procure four pieces of pine about seven feet long and three-fourths of an inch thick by two inches wide; have them joined at the corners, making a square frame, over which fine wires may be drawn, to form an almost invisible support for the white tissue paper with which it is covered. The entire surface must be covered, except about two feet square in the centre, which is left bare. Suspend this arrangement over the head of your sitter by means of three cords attached to the wood work of the top-light, and by placing it three or four feet above the head of your sitter, the ill effects of a too large top-light can be almost entirely overcome. By moving this head-screen in different directions, either to one side or the other, a great many beautiful effects of light can be obtained. To produce brilliant lighting, it is necessary to have the light come through a comparatively small opening in the lower part of the top-light, or the upper part of the side-light if it be more than eight feet high. No brilliant work can ever be produced in a room where the light is allowed to enter from every point of the compass.

As far as side reflectors are concerned, I do not approve of their use except in cases where the subject's face is badly browned from the effects of the sun, or in case of very dark complexions; and even then a little pink powder, judiciously rubbed on the face, will be of greater benefit. But if a reflector is used, care and judgment should be exercised that it is not placed close enough to give rise to cross lights. To those who intend to put in new lights, I would say, step aside from the old method of building large, flat top-lights, and construct one which will do for all kinds of work. Such a light is constructed after this fashion:—Make a large sash, say about 12 by 16 feet, and have the mountings run the short way of the light; now cut an opening in the side of the building large enough to admit this sash. Commence about three and one-half feet from the floor, and allow the sash to incline inward about one foot in three, and have only one large sash, well glazed with double-strength glass. A light constructed after this plan has many advantages over the common flat light, inasmuch as it does not leak, and in northern countries the snow does not lodge on the outside; and last, but not least, the sun never comes far enough north in this latitude to work any mischief with his rays. This sort of light works quickly, giving great brilliancy to the work made under it.

Ground glass is very useful, diffusing the light into all parts of the room, but is at the same time very expensive. Therefore I would recommend all to use a ground glass

substitute on their sky-lights. Flow the side which is to face the room with it, and just try it once, and if you do not like it you can remove it again at a very trifling cost. Tissue paper, which has been brushed over with animal fat (lard), and pressed against the glass, will adhere perfectly, and produces an effect almost equal to ground glass.

All the different parts of an operating room should be painted a very light grey tint; not because it is more beautiful than all other tints or colours, but because any reflection from the wall or any part of the room can be accurately determined as to its actinic force; whereas, if it partook of a chromatic nature, the depth of the shadows on the sitter's face could not be determined with accuracy, and many failures would be the result. But some one will say he cannot afford to change his sky-light and method of working. Very well, then, perhaps your neighbour will see fit to renovate his operating room a little, straighten up his sky-light, and invest in a little tissue paper; for perhaps he is far-sighted enough to see that if he improves his method of working so as to produce more artistic results, the public will appreciate his efforts in their behalf, and be willing to pay an increase in price when they can see an evidence of superiority in the productions from the studio of the progressive artist.

The progressive artist will take advantage of all the little hints and ideas he may see in print, while old Mr. Pinch Nickle will run along in the old ruts, content with earning a paltry pittance, and eking out a miserable existence. Progressive artists subscribe to and pay for some photographic magazine, from which they glean much of value while Prof. Knowitall will do neither the one nor the other, but instead will occasionally borrow a journal from his neighbour, and invest in patent processes for saving more silver in a month than he uses in a year.

Good, well-lighted, artistic photography will always command good prices, and the photographer who gives attention to the proper lighting of his pictures, and poses his subjects in an easy and graceful manner, will win for himself fame and fortune, while he who ignores all art principles will ere long be numbered with the great mass of those who have tried and failed. All efforts to build up a reputation and to accumulate wealth by lowering prices will be abortive, as fine work and low prices can never harmonize.

SOME FORMULÆ.

The following selection, appearing in our Philadelphia contemporary, were collected by Mr. Gihon from various sources:—

Collodion for Hot Weather.

"Ether	...	...	...	10	ounces
Alcohol	...	...	...	12	"
Bromide of cadmium	...	...	...	1	grain
Bromide of ammonium	...	...	...	1	"
Iodide of cadmium	...	...	...	1½	"
Iodide of ammonium	...	...	...	3	grains

To the ounce of collodion.

"Add to the ether and alcohol, and shake until all is dissolved, filter, and add the cotton. A reasonable amount of age improves this collodion."

Outdoor Photography Collodion.

"Alcohol	...	...	...	1	ounce
Ether	...	...	...	1	"
Iodide of ammonium	...	...	...	2½	grains
Iodide of cadmium	...	...	...	2½	"
Bromide of cadmium	...	...	...	2½	"
Guncotton	...	...	...	5-6	"

"This collodion keeps well, and is good for view and portrait work. If it should become too pale by long keeping, which it will do when the guncotton has been washed in dilute aqua ammonia, tint it with a solution of iodine in alcohol."

Developer.

"Saturated solution of iron...	1 ounce
Acetic acid	1 "
Water	12 ounces

"For light drapery or children's pictures use it a little stronger."

Solution for Bath.

"Water	8 ounces
Glycerine (good quality) ..	4 "
Silver	1 ounce

"Sun it for a few days. Should there be any acid in the silver, put a drop or two of aqua ammonia into it. Then boil it for a few minutes, and give it, after cooling and filtering, a liberal dose of nitric acid. Plates prepared in this bath will allow you to go miles, and come back with a wet plate."

Developer for Outdoor Negatives.

"Glacial acetic acid	1 ounce
Water	16 ounces
Protosulphate of iron	15 to 30 grains

To the ounce of solution.

"The proportions have to be varied so much according to circumstances, that it is impossible to give them exactly. With a little practice one soon learns to regulate the strength of the iron and acid to suit the work in hand. In warm weather the developer can be diluted just before using; consequently, one can carry as much in one bottle as when diluted will make two."

A Good Redeveloper.

"Soft water... ..	4 ounces
Citric acid	30 grains
Protosulphate of iron	12 "

"To be used with silver solution, twenty grains strong, and applied the same as pyrogallal acid."

Forcing Solution.

"Pyrogallal acid	5 grains
Soft water... ..	1 ounce
Acetic acid	$\frac{3}{4}$ "

"Take enough of this solution to flow the plate, and add three or four drops from the silver bath; flow the plate with this, which will rapidly give all the intensity required."

*A Good Intensifier.**"Solution No. 1.*

"Permanganate of potash ...	5 grains
Water	1 ounce

"Solution No. 2.

"Bichromate of potash	10 grains
Water	1 ounce

"These solutions are made up and kept separate, being mixed in equal proportions when wanted."

*Solar Printing.—**"Salting Solution for Cartoon Paper.*

"Boiled milk	1 pint
Glacial acetic acid	10 drops
Albumen from two large eggs.	
Bromide of potassium	80 grains
Iodide of potassium	160 "

"Mix thoroughly, and filter. The albumen should be well cut before adding it to the milk. Float or swab the paper with the salting for two minutes."

"Sensitizing Solution.

"Water	1 ounce
Nitrate of silver	40 grains

"Swab this on evenly for two minutes."

"Developer.

"Water	8 ounces
Pyrogallal acid, 2 heaping teaspoonfuls	
Glacial acetic acid	1 ounce
Bromide of potassium	4 grains

"Fixing Solution.

"Water	10 ounces
Hyposulphite of soda	4 "

"Rose-coloured Varnish.—Soak half-an-ounce of red saunders in alcohol, until the colour is extracted; add to any good varnish until the desired shade is obtained."

Ferrottype Developer.—

"Water	64 ounces
Iron... ..	1½ "
Double sulphate of iron and ammonia	2 "
Acetic acid... ..	3 "
Liquor ammonia	10 drops
Alcohol	2 ounces
Nitric acid... ..	16 drops
Sulphate of potash	½ ounce."

Castor Oil in Negative Varnish.—"Varnish made after the following formula will never check nor split on the negative."

"Alcohol	2 quarts
White lac	12 ounces
Gum sandarac	1½ "

Castor oil, about one drop to each ounce of varnish."

Cement for Porcelain.—"Soak a quarter of an ounce of isinglass in distilled water until it has swollen; pour off the water, and cover the isinglass with alcohol; the dissolving may be hastened by gentle heat. Next dissolve one-eighth ounce of mastic in three-eighths ounce of alcohol. Mix the two solutions, and add one-eighth ounce of gum ammoniac finely powdered."

"Evaporate the whole in a water bath to the consistency of cabinet-makers' glue. Keep in bottles, and warm for using. Apply to the clean broken edges with a brush, warming the pieces before applying, and keeping the mended dish in a warm place for a time."

MICROSCOPE AND CAMERA.

BY "C. M."

A SIMPLE AND EASY METHOD OF TAKING PHOTOGRAPHS OF MICROSCOPIC OBJECTS.

THE object of writing this is to show by what simple means and ways a photographer with a microscope, and a microscopist with a camera, may obtain very satisfactory results in taking photo-micrographs or enlarged photographs of the "wonders of the microscope."

It seems that existing treatises on the subject, and the apparatus they describe as necessary, rather deter amateurs from trying their hand at this fascinating work. To produce the highest results for histological studies, it is indeed indispensable to have instruments of the highest power and all accessory apparatus for proper illumination: condensers, reflectors, heliostat, &c., together with a thorough knowledge of working the microscope, the extent and complexity of which, most persons can have no idea. This, however, we must leave to the comparatively few select and privileged apostles and ardent disciples of science.

But if we cannot build a palace, we can perhaps build a little cottage, and live in it just as comfortably, though on a smaller scale.

Now then, to business.

The photographer needs—besides what he has and knows—a good microscope that can be inclined horizontally, has a rack-and-pinion arrangement for focussing, and a concave mirror movable in any direction. When you have a microscope, any microscopist will be glad to make you acquainted with its use, if you do not know it already. How to apply it to the camera box afterwards, I shall tell you presently.

* *Practical Photographer.*

The microscopist needs—besides what he has and know^s—a small, half-size camera box, having bellows for extension, a very fine ground-glass for focusing, and a plate-holder perfectly adjusted in focus with the ground-glass^s (this is most important). No photographic lens or objective is required. Any photographer (they are, fortunately, more plenty than microscopists) will make you acquainted with the “dark art,” get all the necessary materials, chemicals, and vessels, and arrange a dark closet for you. (How happy the microscopist of the future, when bath and collodion will be things of the past, and dry plates only known !)

Now let us suppose that both the photographer and the microscopist are provided with the working tools and materials as above stated, and have become somewhat expert in their mutual arts.

Get a nice, smooth board about four feet long, and three inches wider than your camera box; fasten cleats or strips of wood along both lengths of the board, for the camera to slide within them firmly but smoothly.

Stand your microscope near one end, and in the middle of the board; incline the tube horizontally, with the eye-piece end towards the camera; push the camera towards it until the microscope enters the round hole at its centre. If much lower than the centre, raise the microscope by an additional piece of board. If much higher, plane off a portion of the board to sink the microscope lower. After the microscope and the camera are thus well centred, fasten the foot of the microscope firmly down by cleats or otherwise. Next, close up the round hole in the camera with thick cloth or felt, leaving or making an opening in the middle, only just large enough to admit the microscope tube, so that no light between can pass into the camera; an additional strip of cloth around the tube may be necessary to shut out every ray of light.

Now, the camera and microscope being well “wedded” together, place the whole board upon a firm table standing close to an open, sunny window, and alongside (not towards) the window, so that the sun can shine on the mirror of the microscope; draw the window shade down so as to shut off the sunlight above the mirror, and a pasteboard or thick sheet of paper may shade the camera, and especially the focussing glass. Everything is now ready to begin work, *secundum artem*.

Beginners will better use a low power objective, and a slide with a coarse object such as a flea or other small insect (transparent, of course) first. Turn on the sunlight by the mirror until a full round circle appears on the ground-glass of the camera. Pushing or sliding the camera towards the microscope enlarges the circle, and withdrawing it makes it smaller; but the eye-piece or tube must of course always be inside the camera. (The eyepiece is *not* taken out for our present work.) Now focus the object as usual by the adjustment screw of the microscope, until a perfectly sharp image appears on the ground-glass. Meanwhile you may have put a plate into the bath, which now will be ready for the plate-holder. Just before taking out the ground-glass from the camera, look once more that the object is fully illuminated. Lose no time now, but place a piece of dark yellow paper between the slide and the objective glass of the microscope to shut off the light; take out the ground-glass and put in the plate-holder, and raise the shield. Do all this with gentle motions. Now lift the yellow paper from the object for three or four seconds only, then replace it again and shut down the shield of the plate-holder. Carry into the dark closet, and develop with a rather weak (say 20-grain) iron developer. You will of course see at once whether the time of exposing in the camera was too long or not long enough, or just right, and govern yourself accordingly at the next trial. In this respect, the photographer has the decided advantage over the microscopist. More time, even ten or fifteen seconds, must be given (owing to feeble lights) when a high power is used, or the camera extended by the bellows to fill up the whole plate instead of keeping the circle of light within it. The greater o

lesser transparency of the object is also a matter for consideration.

The resulting negative may then be used for printing photographs on paper or for making glass positives for the lantern in the usual way. Of course it can be enlarged or reduced to any desired size by copying.

In conclusion, I would say that in the preceding directions I have endeavoured to give in plain language, avoiding as far as possible all technical or scientific terms and phrases, explicit instructions for making photo-micrographs (not micro-photographs) by the simplest means. It is, of course, impossible in an article like this to instruct the photographer in microscopy, and the microscopist in photography; this they must learn of each other. But each will have no difficulty in producing good results after some practical knowledge and experience. I may only remark, in conclusion:—

First: That the morning sun and a cloudless sky is most desirable.

Second: The building, as well as the table or stand, must be absolutely free from vibration during the few seconds of exposure; a waggon passing by in the street shakes the whole building, even when of brick or stone. No walking in the room, of course.

Third: Absolute cleanliness and careful manipulation are indispensable in both branches of the art.

FIRE AT SARONY'S STUDIO.

We learn with regret, from an account in the *York Herald*, that on Monday night week a serious fire broke out at Sarony's photographic studio, at Scarborough, but, fortunately, it was discovered in time to prevent its spreading beyond the room where it originated.

It appears that about midnight Mr. G. Thomas went to the premises for the purpose of attending to the green-house fires, and he then heard the crackling of fire in the building. He at once raised an alarm amongst the inmates, who were all at the other end of the extensive building, and also called P.C. McKenzie, who resides close by, and who has charge of the fire hose stationed on the South Cliff. A messenger was also despatched to the police station, and the Chief Constable gave orders for the reel and hose to be got out and taken to the place. On his arrival, he found that P.C. McKenzie and P.C. Pickering Johnson had, with commendable promptitude, got the South Cliff hose out and attached it to the plug at the end of Albion Road.

In the meantime, the inmates of the house were not idle, and Mr. Tugwell and others were busily engaged in throwing buckets of water on to the fire, which broke out in the ladies' dressing-room on the right hand side of the corridor. Fortunately, there was an excellent supply of water, and a great quantity was poured on the flames, which were eventually subdued and finally extinguished; but not until great damage had been done. It is supposed—though it is not known with any degree of certainty—that the chimney which conveyed the smoke from the engine got on fire, and that this in turn set fire to what is known as a “trimmer.”

The whole of the contents of the room are more or less damaged, and many valuable articles are altogether destroyed. The fire having been extinguished, Mr. Fisher, the manager, made a survey of the premises, and in a room immediately over the one in question, and occupied by Mr. Neumans, artist, found that the heat had seriously damaged numerous works of art and several portraits. The large picture gallery, containing many thousand pounds' worth of property, adjoins Mr. Neumans' room, but the contents have fortunately escaped. But for the fact of the fire being discovered when it was, there is little doubt that the structure would have been entirely destroyed. As it is, the damage will be little less than £500, but this amount is, we believe, covered by insurance.

The Photographic News.

Vol. XXIII. No. 1111.—DECEMBER 19, 1879.

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PHOTOGRAPHS RESEMBLING DRAWINGS.

It is somewhat remarkable that whilst several methods are in existence of producing photographs closely resembling monochrome drawings in colour and texture, so few photographers step out of the beaten path, or attempt to produce anything but the stereotyped style of prints on albumenized paper. One of the most charming styles we have seen was that practised by the late Mr. Taylor, of Marseilles, who described his method of printing on drawing paper with borate and phosphate of silver. The prints were of a rich warm brown tint, and were not easily distinguishable from sepia drawings. The subjects selected were landscapes and old architecture, which were most effective in this style. We subjoin the details, and strongly commend the process to photographers wishful to produce work out of the ordinary photographic routine:—

"The materials to be used for the coating solutions are: bleached shellac, borax, and ordinary phosphate of soda.

Solution with Borax.

Water	100 parts by weight
Borax	4 " "
Shellac	8 " "

Solution with Phosphate of Soda.

Water	100 parts by weight
Phosphate of soda	4 " "
Shellac	5 " "

"To prepare either of these solutions, the proper quantity of finely-pulverised shellac is put into a bottle, shaken with water, to wash out the soluble salts which may remain from the bleaching process, and thrown on a filter to drain.

"The water, contained in a suitable vessel (e.g., an enamelled iron pot), is placed on the fire, the borax or phosphate dissolved in it, and the shellac added in a damp state. Care must be taken that the water is not too hot when the shellac is put in, or this last will stick together in lumps, which will dissolve with great difficulty. The liquid must be kept gently boiling for about two hours, stirring from time to time. More water must be added to replace that wasted by evaporation.

"As the resin is in excess, all will not be dissolved. The insoluble portion remains as a grey, slimy matter, which chokes the filters very rapidly. The liquid obtained must therefore be allowed to settle for about twelve hours, carefully decanted and filtered, first through the sponge, and then through paper.

"These shellac solutions will keep many months, camphor being put in the bottles to prevent mouldiness. They may be used separately or mixed, according to the colour required, or the nature of the negative to be printed. A

mixture of five parts of the borax solution and one of that made with phosphate of soda gives good results with negatives of mean intensity.

Either ordinary photographic paper or drawing-paper may be used. The following remarks apply more especially to Whatman's drawing-paper.

"The paper should be cut one or two inches longer than the prints to be made, and the extra length doubled over towards the side which is to receive the image. It serves as a handle in the subsequent operations. The sheet to be coated should be plunged into the bath endwise, so as to flood it at once, a glass triangle being used to insure this. The right side of the paper—that which is to receive the image—is to be uppermost in the bath, and the glass triangle passed over every part of it slowly and lightly. After an immersion of about a quarter of a minute the paper is to be drawn out and hung up to dry.

"For rendering the paper sensitive a bath containing fifteen per cent. of nitrate of silver has generally been used, but a weaker bath might answer the purpose equally well. This bath should be filtered each time it is used. The sheets may be floated on the nitrate of silver bath from three to five minutes.

"Although, in some cases, it is advantageous to use the paper in this state of preparation, it will generally be best to let it undergo another operation before printing. This consists in plunging the sheet once more, either in the coating bath first used, or in a similar bath diluted with half its bulk of water; the operation is to be conducted exactly in the same way as for the application of the first coating. The paper thus prepared will be found to keep fit for use a long time.

"Prints on paper that has received but one coating of shellac should be thoroughly washed before fixing; those, on the contrary, on paper that has received a second coating, must be fixed without any previous washing.

"Prints on paper prepared with phosphate of soda alone, or with a large proportion of this salt, take a good tone when simply fixed with hyposulphite of soda, 1 part in 4. But when the shellac solution has been prepared with either borax alone, or borax with a small proportion of phosphate of soda, the best tones are obtained by the use of sulphocyanide of ammonium in conjunction with hyposulphite of soda; these salts may either be mixed in the same bath, or the prints passed first through a solution of the sulphocyanide, and the fixing terminated with hyposulphite of soda alone.

"After the washing, which must be very thoroughly and carefully executed, the dried prints may be considered as being finished. In most cases, however—and especially when phosphate of soda has been used—the appearance and permanency of the prints may be enhanced by saturating them with a varnish composed of—

Bleached shellac	30 to 40 grains
Alcohol	1 fluid ounce.

"This should be flooded over the back of the print with a brush, so as to penetrate the whole thickness of the paper, and come out on the face, to which, when dry, it should give but a very slight gloss.

FRENCH CORRESPONDENCE.

PHOTOGRAPHY AMIDST SNOW AND ICE—PROGRESS OF THE SCHEME FOR A GENERAL SYNDICATE OF PHOTOGRAPHY—DR. VAN MONCKHOVEN AND THE GELATINO-BROMIDE PROCESS—COLOURED PHOTOGRAPHS OF M. GERMEIL-BONNAUD.

Photography during the Snowstorm at Paris.—I read somewhere lately that a certain lady, issuing invitations for a dinner party, a day or two ago, headed her notes with the joke, "It is particularly requested that the snow may be rigidly excluded as a subject of conversation." The narrator of the story added that the request was strictly

complied with, but that the party was not on that account any the more lively. So it is with me: when I took the pen in my frozen fingers to commence this letter, and put my hand to the icy-cold paper, I resolved conscientiously not to say anything about the snow, for, I thought, every one has heard enough of it already. But how was I to escape the fatal necessity, if only to tell how all photographic operations have been stopped by the fall of the thermometer, and how the societies devoted to our art have been compelled by the severity of the weather to give up their meetings! One must, indeed, be an ardent disciple to turn out of a warm room for the pleasure of attending a meeting of a photographic society, or of listening to a lecture on photography; for all that, however, the meeting of the Photographic Society of France was by no means badly attended, and M. Davanne's lecture at the Sorbonne, in spite of a temperature registering 28° of frost, and notwithstanding the difficulty of getting about, due to the deep snow which covered the streets of Paris, counted an audience of about two hundred persons. No one was more surprised at this result than M. Davanne himself. In a letter addressed to me on the morning of the same day, he expressed his opinion that he would be compelled to deliver his lecture to an audience of three (not counting the lecture attendant and the hall porter), and those three would be the gentlemen who had kindly offered to assist him with his experiments. If so large a number of persons can be found on such an evening to brave the inclemency of the weather, it is fair to conclude that not only M. Davanne's lectures are always interesting and instructive, but also that they have been found to be of value to those who practise photography as a profession. The fact is certainly worthy of being recorded at a time when the greater number of our theatres have had the option of closing their doors or of playing to empty benches.

The Project for a General Photographic Syndicate.—The only other society which attempted to hold a regular meeting at the usual time and place was the *Chambre Syndicale de la Photographie*, and even that was necessarily adjourned in consequence of the agenda paper containing several subjects of importance, which could only be discussed at a more numerously attended meeting. One of these subjects, as I have already explained in my previous correspondence, is the scheme for uniting all the photographers of France, and perhaps also some foreign correspondents, in a general guild or syndicate for the promotion of photography. Such a project as this, if it be successful, cannot fail to elevate the rank of photography among the industrial arts, and to draw closer the bonds of good fellowship which ought to unite all the members of the profession, as well as to promote the adoption of means for protecting their interests when necessary. The results obtained will be valuable in proportion to the number of those who are interested in the scheme, and who will lend their moral support and the aid of their personal exertions in favour of the common work. My own wish would be to see associations of the same kind formed in other countries, and that by the interchange of mutual relations one general and really international photographic union should be established. So soon as our own syndicate in France is in full working order we shall seek to enter into communication with the more energetic among our foreign brethren, and to induce them to do for themselves what we have succeeded in doing here. From the combination of these efforts we must be able to produce results that cannot fail of being of advantage to the present as well as to the future of the photographic art and industry. It will be seen, therefore, that the Arctic severity of the weather has not rendered us here less fervent in our aspirations for the common weal; on the contrary, we profit by the cessation of work which the great cold renders compulsory, to engage with ardour in schemes that may benefit the interests of the whole photographic body.

Van Monckhoven's Gelatino-Bromide Process.—To return, however, to the cold! There has just arrived an icy communication from the manufactory of gelatino-bromide plates: "Everything is frozen; work quite impossible." There can be no doubt of the truth of this eloquent though laconic report, since it proceeds from our friend Van Monckhoven, who is as indefatigable and untiring in his work as he is ardent and eager in spirit. *Après* of the gelatino-bromide of silver, I must not forget to describe the publication of a new work on the process by Dr. Van Monckhoven; it contains "Practical Instructions" which are so precise and clear that it will doubtless have the effect of still further popularizing the process. Nevertheless, my own conviction remains unshaken, that there will always be a difficulty in inducing photographers to make their own plates. Rather the manufacture on an industrial scale of the emulsion plates as it at present exists in England, at Paris, Ghent, &c., will receive an enormous development. It will be improved, and will soon arrive at such a degree of perfection, that all the world of professional and amateur photographers will always prefer getting their plates from some special establishment of the kind, than try to make them for themselves. The preparation of gelatino-bromide emulsion plates is always an exceedingly delicate, if not a difficult operation, and is often exposed to the danger of failure from climatic and other causes. There is reason to hope that at no distant date tourist photographers will be able to supply themselves with sensitive pellicles like those which M. Ferrier exhibited at the late meeting of the Photographic Society of France. The weight of a large quantity of such pellicles is exceedingly small, and their use must tend to develop very largely the application of photography. We have thus a manifest want supplied, and it should not be lost sight of, for, industrially speaking, it promises to be a source of great profit. The idea, indeed, is not a new one; Mr. Warnerke has already for some time introduced to notice, and has on sale, large quantities of his sensitive tissue. This is really a film of iodised collodion made to adhere to a sheet of paper by means of caoutchouc varnish; it is easily detached from the paper by applying benzine to the back of the paper, and this, working through the pores, dissolves the caoutchouc. Ingenious and practical as this process is, I should prefer to have a pellicle ready for development without the necessity of drawing it off a provisional support. For this reason, I desire to draw attention to the gelatine pellicles which M. Ferrier showed me; they are like thin pieces of glass, and have the same transparency as glass, without being liable to break, and the manipulation of them is very simple and plain. Mr. Warnerke might perhaps—if, indeed, he has not done so already—alter the process which he first brought out to one more like that which I have just described. To obviate the difficulty of getting a surface which shall be quite plane and smooth, the sensitive pellicle might be enclosed between two plates of glass, provided that the change be effected in a place where no light can penetrate.

M. Germeil-Bonnaud's Coloured Photographs.—On account of the severity of the weather I was not present at the last meeting of the Photographic Society, when M. Germeil-Bonnaud's coloured photographs were exhibited. I can, therefore, only speak of them by hearsay. I have read descriptions of the process, but, ingenious as it is, it does not appear to me to fulfil all the requirements, either as regards the colouring, or as regards the permanence of the colour; in fact, it takes us back again to all the inconveniences attending printing in silver chloride and fixing with hyposulphite. For this reason a process of this kind can never obtain my sympathy; for, instead of advancing, it is a step backward. Personally I am always longing for the proscription of all current methods of photographic printing which do not render the pictures in absolutely stable colour. It is not my intention to criticise the process of

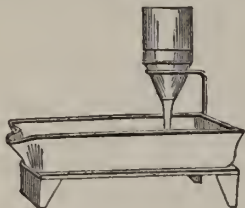
M. Germeuil-Bonnaud. Up to a certain point it is very good, and it is capable of rendering good service; but, I repeat, it must be received with a certain reservation; and it deserves only a provisional credit, just as the results it produces are provisional. I am very unwilling to say anything which may wound the feelings of an estimable colleague, but I cannot change my views in favour of unstable processes. They are no doubt still capable of doing good service, and I am quite willing to recognize what they have already done for us. I am, therefore, far from despising them. But I am always sorry to see, among the novelties which are continually being introduced, some which are produced by methods that ought, as I think, to be more and more discountenanced. With these views I cannot but regret that the process of M. Germeuil-Bonnaud, excellent as it is in my idea, should require manipulations which are now only counted among the tolerated details of our art, not among the signs of progress.

LEON VIDAL.

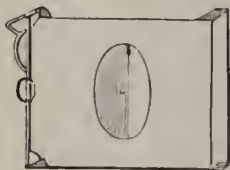
HEATING A TONING BATH.

BY S. L. PLATT.*

WE all know how perplexing it is when one is toning to have to stop and get two bricks to place under a toning bath to raise it so we can use an alcohol lamp. Usually one end is higher than the other, so the solution runs all to one end; then the lamp heats all in one spot. I have a tin stand three



inches high, just the size of the bottom of the toning dish. The top piece is one-quarter of an inch from the bottom piece, which forms a hot-air chamber. The bottom piece has a large hole in it, covered with a loose piece of tin.



The lamp flame strikes the loose piece and fills the chamber with hot air, which warms the whole top evenly.

This also makes a fine thing to dry plates on.

COPYING PAINTINGS.

OUR Philadelphia contemporary gives an interesting description of the studio and arrangements for copying employed by Messrs. Overbeck in Dusseldorf. It says:—

"The first great object is to light the subject properly. The copying room of the Messrs. Overbeck is very large, and perhaps eighteen feet high, with high front and side-lights. All the walls and objects in the room that would act as reflecting surfaces are carefully blackened, and all extraneous light is shut off from the lenses by long cones, which reach out as far beyond the brass work as possible.

* Philadelphia Photographer.

The camera is placed on wheels, which run on an iron track nearly the whole length of the copying room, and fastenings supplied to make it rigid in any desired place. The painting is placed on an adjustable stand, and is coated with thin linseed oil previous to copying, in order to clear up the shadows, &c. A Steinheil lens is used, and is declared by the Messrs. Overbeck to be the best for flat surfaces. The exposure varies according to the intensity of the light. In the chemical manipulation of the negative, we saw no novelty except in one instance. Many of the copies are very large, and in making such it is very difficult to get a uniform thickness of collodion all over the plate. Messrs. Overbeck first coat the plate in the usual way, and then turning it end for end, re-coat it, and thus have quite the same thickness of film all over the plate. This double coating of collodion also tends to keep the plate moist, which is a very essential thing in making the long exposure necessary when copying an oil painting. Plates thus treated will bear exposure at least two hours—a hint for those who have interiors, &c., to make."

SOLAR ENLARGEMENTS BY DEVELOPMENT.

TAKE sixteen ounces of fresh milk; skim off any cream that may be on it, then boil it; next add one-half an ounce of acetic acid; then shake and filter until it is perfectly clean. Next add three grains of iodide of potassium, and two of bromide of potassium to each ounce of the above filtered milk solution. Put this on your paper the same as you would swab on any solution, with a tuft of clean cotton, and then let it dry. When you have your focus taken, and ready to expose, take one of your sheets that is prepared as above, and tack it on your printing-board, and swab or brush on the same way as above a solution of nitrate of silver, thirty grains to the ounce of water, making it slightly acid with acetic acid. Then place it while wet in the position that you had focussed to, and expose it until the print shows in the shadows not very strong. It is then done. Take off and swab on again a solution of eight ounces of water, fifteen grains of pyrogallie acid, and one ounce of acetic acid. This must be done very quickly and smoothly. The picture will appear instantly, and as soon as you think it dark enough, place it in your hyposulphate bath. An old hypo bath is better than a new one; one that has not been used too much. The time of printing takes generally, when the negative is just right, from one to two minutes. Care should be taken to keep all diffused light from striking the paper.—*Practical Photographer.*

A PHOTOGRAPHIC ACTION.

At the Metropolitan County Court of Bloomsbury the case of Pheimister v. Stanton was heard before the presiding judge, the plaintiff, being a photographer in Camden Town, suing the defendant, an actress, to recover the sum of £2 for certain cartes-de-visite ordered by the defendant, and delivered to her address in the Arlington Road. The plaintiff, being called, proved the order being given, the proofs being delivered, of the account having been applied for, and payment refused. His case terminated, the defendant, called, said she told the plaintiff that she required the cartes at once, as she had to send one to a provincial manager with a view to an engagement, which she had lost in consequence of the photographs not arriving in time. She at once sent them back, but as the plaintiff re-delivered them to her, she refused to pay for them, as they were utterly useless to her now, having got others in their place. The plaintiff, being recalled, denied there was any specific time mentioned, but that he was to do them as soon as possible. At this stage of the case his Honour was of opinion that the plaintiff was fully entitled to recover the whole amount claimed, but at the same time the defendant was entitled to have her photographs.

Correspondence.

A WARNING TO OXYGEN MAKERS.

DEAR SIR,—A few days since, a gentleman at Weymouth wrote to a London firm stating that, having filled a retort with oxygen mixture, an explosion occurred when it was placed on the fire. Enclosed in the letter was a sample of a black powder which he had used as peroxide of manganese. Upon examination, I found it to be sulphide of antimony, a substance that, when added to chlorate of potash, forms a highly explosive mixture very similar to gunpowder.

As fatal accidents are on record resulting from similar mistakes, I would earnestly recommend every amateur oxygen maker to test his chemicals before using them, for there are several equally dangerous "black powders" which an ignorant or careless dealer may supply as peroxide of manganese. A simple test is to pound a little of the mixture and apply a light; if it refuse to burn it may be safely used, otherwise the danger is obvious.—Yours faithfully,

R. PEARSON.

INTENSIFYING GELATINE NEGATIVES.

DEAR SIR,—I note that your correspondent, Mr. A. J. Jarman, has adopted (and modestly described as his own) my method of intensifying gelatine plates with mercury and hypo. The formula given by your correspondent in last week's NEWS is, however, anything but correct. I therefore give for the benefit of your readers the formula which up to the present time I have found most efficient:—

Bichloride of mercury (dissolved in 6 ounces of water)...	60 grains
Iodide of potassium ...	90 "
Water ...	2 ounces
Hypsulphite of soda ...	120 grains
Water ...	2 ounces

Pour the iodide solution into the mercury solution, then add the hypo, when the red precipitate caused by the addition of the iodide will be immediately re-dissolved, and the solution will be ready for use. The above mixture may be used in a dipping bath or dish, or poured over the negative after fixing. The intensifier, made as above, acts very quickly, a few seconds being usually sufficient to give printing density to the thinnest negative; if required to work slower, add more hypo, which will also alter and improve the colour of the negative, and prevent any tendency it may have to become of a yellow or orange tint in the half-tones. Wash well after intensifying.

The above method is acknowledged to be at present the only really practicable method of intensifying gelatine negatives. Trusting it may prove of service to your readers, I am, dear sir, yours very truly,

B. J. EDWARDS.

6, The Grove, Hackney, London.

A SUGGESTION.

SIR,—I am not aware that the idea which I propose to throw out to your readers has ever been executed.

It is this, and I think it would be greatly appreciated by the travelling public: to produce a photographic copy of a first-class map of England and Wales of such a size as to be clearly legible, and at the same time convenient for carrying in a purse or pocket-book. In addition to the map, with a little trouble, could be added, in writing, tables giving the names of the different towns in alphabetical order, their populations in 1871, the railway fare from each, and the number of miles by road to London. To these tables, so as to give the map a special value to each different trade, might be added one giving the short name and address of tradesmen in a special line of business, as, for instance, "The Printer and Bookbinder's Map of England and

Wales" would contain the names of printers and bookbinders in this style:—Aberdare; Brown, High Street Jones, Broad Street.—Banbury; Robinson, Oxford Street; and so on. These names can all be found in Kelly's Directories of the various trades of the Kingdom. At the present time, when there are thousands of working men moving from one place to another in search of employment, an article of this kind—if it could be produced at (say) one shilling or less—would doubtless find a ready sale.—I am, yours, &c.,

ONE WHO WALKED RECENTLY OVER
1,000 MILES IN SEARCH OF WORK.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE usual monthly meeting of the Photographic Society of Great Britain was held at the rooms of the Society, Pall Mall East, JAMES GLAISHER, Esq., in the chair.

The minutes of the last meeting having been read and confirmed, Messrs. William Huggins, D.C.L., F.R.S., &c., H. Manfield, W. Wheeler, and Charles Sands were elected members.

Herr WARNERKE resumed his paper on "Photometers," the first portion of which was read at the last meeting of the Society. At the conclusion of the reading of the paper, Herr Warnerke exhibited his photometric apparatus, the measurements of which were determined by the use of ferric oxalate, and stated that on another occasion he should be pleased to continue his observations on photometers, as he had not that evening spoken of those photometers based upon the combination of chlorine with hydrogen, and especially upon one recently introduced by himself based upon phosphorescence. The paper will appear in our pages in a future issue.

CAPTAIN ABNEY observed that the paper just read was of considerable interest to him, as he had made photometry an especial study. Herr Warnerke's own photometer was undoubtedly a valuable one, and he (Captain Abney) had had an opportunity of seeing it at work in Herr Warnerke's laboratory two or three years ago. He had himself made a rough copy of it, and found it to answer extremely well. There were, however, one or two things in the paper upon which he should like some information. In the first place, what was the sensitive liquid used by Herr Warnerke?

Herr WARNERKE explained that it was ferric oxalate.

Captain ABNEY remarked that transparent photometers, such as that used with ferric oxalate, had other sources of inaccuracy besides those arising from changes of temperature, barometric pressure, or the sudden divergence from light to darkness. Ferric oxalate absorbed light in different proportions according to the thickness of the colour of liquid, and consequently it was never possible to utilize the whole of the so-called actinism of light. On some days the yellow rays were more active than the blue, while on a summer's day he had found three hundred times as much blue as on an ordinary day in winter, when the yellow ray was more intense. Roscoe's photometer, which he (Captain Abney) had used for some years, and in which chloride of silver paper was used, was not an accurate instrument; but it was a close approach to accuracy. The only accurate photometer, he thought, would be one which was capable of receiving an exact impression of the whole of the spectrum. He had made several photographs of the spectrum, showing the difference between the light in summer and in winter. Herr Warnerke's photometer would answer admirably to time the exposure of negatives, but was scarcely fit for exact scientific purposes. He (Captain Abney) had constructed a photometer, however, which he should have pleasure in bringing before the Society, and by means of which it was possible to photograph the spectrum during every quarter of an hour of light.

Herr WARNERKE said that what Captain Abney had stated about the difference of absorbing powers was perfectly true. At some future time he should have some observations to offer on this subject, taken not only from his own experience, but from the experience of others. He might remark, in regard to his own photometer that the difference, in absorption was not of much consequence so far as the asphalt process was concerned, because asphalt was more affected by the red rays than by any other.

Captain ABNEY remarked that Dr. Monckhoven's photometer, referred to by Herr Warnerke, was identical with a process used by Niepce de St. Victor forty years ago.

Herr WARNERKE observed that this was the case.

The PRESIDENT, having referred to the value of the paper read by Herr Warnerke, enquired whether that gentleman would at the next meeting bring the new photometer to which he had made reference, and also made a similar inquiry of Captain Abney.

Herr WARNERKE and Capt. ABNEY both replied in the affirmative, and a unanimous vote of thanks was then passed to the former or his paper.

The PRESIDENT then stated that in pursuance of a resolution passed in February 1878, when the Society offered two prizes of the value of £5 and £2 respectively to be given to the successful competitors in an examination in skilled photography in connection with the Society of Arts, a communication had been made to that Society to this effect. A letter had, however, been received from the secretary stating that though the council had accepted the offer, no competitors had presented themselves, and consequently they had handed over the prizes to the City and Guilds of London Institute.

Captain ABNEY then moved, and Mr. Sebastian DAVIS seconded, that this action be approved.

A paper by Captain Abney was then taken as read, and the meeting adjourned to the 13th January, 1880.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

Rules of the Monthly Artistic Competition in Photography.

1. That the competition be monthly, and pictures intended for competition must be sent in before the day of meeting, addressed to the Hon. Sec., Society of Arts, Adelphi.
2. That at each meeting the President shall announce a name or title for the subject of the picture to be exhibited at the next meeting.
3. That the first subject be announced at the January meeting, 1880.
4. That the size of the pictures, landscape or figure, be 12 by 16 or under.
5. That a private mark *only* be attached to each picture, but an envelope bearing similar mark outside, and containing proper name and address, be delivered with each picture, such envelope to remain unopened until after the awards.
6. That two artists, not photographers, be appointed by the committee to judge the pictures.
7. That medals or other prizes be awarded at the end of the year.
8. That the exhibits become the property of the Society.

BERLIN ASSOCIATION FOR THE PROMOTION OF PHOTOGRAPHY.

The first meeting after the recess was held on the 19th September, Professor H. W. VOGEL in the chair.

Herr E. RISSE, of Dortmund, sent some specimens of a new process called, by the inventor, *Albatype*. A thin iron plate is coated with plain collodion in which is suspended finely powdered heavy spar (barium sulphate), thus producing a chalky-looking surface. In preparing such a surface, collodion is preferable to gelatine, on account of its drying quicker. Over this surface is flowed a film of silver chloride, on which the object is taken, and the plate is then treated in the ordinary way. The image is dull, but well modelled, and resembles a carbon print on opal glass.

Herr REICHARD mentioned that Herr Talbot had formerly suggested similar plates for carbon printing, and had himself worked with such, but he had prepared them with gelatine and heavy spar.

The PRESIDENT laid before the meeting some instantaneous photographs taken by Obernetter with his own emulsion. These pictures excited universal admiration. Dr. Vogel also gave some particulars of Obernetter's latest experiences with the emulsion process.

Herr SCHULZ took the opportunity of stating that he had kept a sample of Obernetter's first emulsion from February to July, and found it at the end of that time in perfect working order.

Mr. WIGHT had kept the same emulsion to the middle of August with complete success, but found it necessary to keep it in an ice-safe during very hot weather.

The PRESIDENT exhibited to the meeting some first proofs of a peculiar photographic process by Herr Falk. These were reproductions of an oil painting. The negative is first copied on to a steel plate coated with sensitive asphalt, and the latter then etched. One of the peculiarities of the process is, that in consequence of the treatment of the asphalt, a visible grain is formed in the asphalt itself. He also showed a couple of paper covers for pamphlets, both which, having been exposed in front of a window during a summer month, had been bleached by the action of the light in a very remarkable way. The speaker took occasion to point out the existence of a mistaken, though generally received opinion, that aniline colours are more permanent than others. Even the yellow silk stuff dyed with picric acid—the so-called oiled silk of the Parisians—which is so much used for tent windows, faded very soon.

Mr. WIGHT could recommend strongly a yellow calico manufactured by a house on the Rhine; he had found it to keep its colour unchanged for fifteen years.

Herr SCHAARWACHTER exhibited some pictures taken by the patent process of M. Germeul-Bonnaud. The process consists in slightly copying a picture on paper with a dull surface, and then colouring it with smooth colours specially prepared to be able to withstand the subsequent operations. The paper is then coated with salted albumen, silvered, fully copied under the same negative, and finished in the usual way. The speaker showed specimens of prints in both stages of preparation. The appearance of the finished pictures is a very striking one, but it was thought generally by the members present that the same effect might be obtained by skillfully painting ordinary prints, thus dispensing with the second operation of the process. According to the inventor, this second operation protects the colours, and makes them more permanent, but doubts were expressed on this point.

The gelatine negatives taken by Mr. Wight during his late tour were received by the meeting with signs of great interest. They were taken on gelatine plates prepared by himself in April last; these were exposed during the summer months, and have been only recently developed. As objective he used Ross' rectilinear lens, which he found to work with ease, and to give correct drawing with a large angle.

Dr. VOGEL thought that Stenheil's achromatic landscape lens would render the same service, and be cheaper.

Mr. WIGHT remarked, besides, that the determination of the proper length of exposure had caused him very great difficulty, though a correct result depended materially on it. He described also a visit that he had made to the establishment where Messrs. Wratten and Wainwright, of London, manufacture their gelatine plates. Notwithstanding the great extension of this establishment, and the fact that eight men are occupied solely with coating the plates, consumers are so numerous that they have often to wait weeks before they can get their orders completed.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

A MEETING was held on October 7th, the President, H. J. NEWTON, in the chair. Minutes of last meeting read by Secretary, and approved.

Mr. TAYLOR exhibited to the Section an actinometer primarily constructed to facilitate carbon printing, the invention of Mr. H. J. Burton, of London. Exhibiting the instrument, he said the invention was based upon the well-known resistance offered to the transmission of light by a numerically progressive series of coloured media, the opacity of which increases in a definite ratio with each increase in the order of the numerals. It consisted, as they would see, of a small box the lid of which was capable of sliding backwards and forwards to a limited extent. Making use of language he had adopted elsewhere when originally describing the actinometer, he would say that "the cover was glazed, half being deep orange; the other half is clear glass, on it being printed the numerals up to 10. The first of these is so feeble as to be barely visible; the second is more dense, and so on up to the last, which appears by contrast with the first to be entirely opaque, although on minute examination it is found not to be so. On a convenient portion of each figure is impressed a solid but minute black dot, the object of which will be presently explained. The actinometer contains a small roll of sensitive paper, so prepared as to retain its purity for months. This band may be drawn forward over a flat and firm cushion, and by means of springs presses firmly against the numbered half of the glass plate. On exposure to light for even a few seconds the paper

darkens sensibly, but the precise degree cannot be perceived by looking upon the surface. In order to ascertain the intensity of the luminous action, the cover of the actinometer is slid forward, by which the orange glass is made to cover the paper that was exposed, and upon which may now be seen the whole of the figures, which are white upon a ground more or less darkened according to exposure. But something more than the figures will be seen. I have said that there is an opaque dot upon each figure, and that dot will be seen in the print upon each numeral precisely in relation to the exposure given. With an exposure of a few seconds the dot on fig. 1 will be plainly visible; a little longer shows that on 2 and so forth, each figure in the ascent being more opaque than the preceding one, and resisting longer the transmission of the light. But the capability of registration is not limited to the "resolving" of the indicating dot up to the last figure of the scale; for as the exposure proceeds and brings into view the dots on the higher numerals it is all the time penetrating through the lower ones and merging each figure progressively into the background. Hence by this secondary registration the range of the actinometer is greatly increased. He then described the manner in which the albumenized sensitive paper was prepared so as to retain its sensitiveness and purity of colour for a few months.

Mr. MASON: Is this paper as sensitive as our ordinary albumen paper?

Mr. TAYLOR: You can make it as sensitive as you choose by adding gallic acid to the ordinary bath.

Dr. MILLAR said that the addition of orange glass is a very valuable one to the old actinometer, that has been used so long, especially in carbon printing.

Dr. VANDERWEYDE: I would suggest something about actinometers. It has to be experimented upon. In the first place, it has to be placed screened from the back of the camera in a kind of hood or funnel, so as only to be affected by the light coming from the object to be photographed; if exposed to other light than that it cannot be a true criterion of the intensity of light which falls on the camera. Secondly: Every actinometer must be used under the same conditions of exposure as the plate itself. I would suggest experiments with the radiometer. I have one of Prof. Crookes' in my room to measure the electric light. The standard candle is an absurd measurement. The radiometer in clear bright sunlight at midday makes 100 revolutions per minute; at 7 o'clock in the morning it shows a tendency to revolve; at 9 o'clock it revolves pretty rapidly. If I place it at such a distance from the electric light, and count the number of revolutions it makes, then I have my data—my electric light in comparison with sunlight, if you want to express it—so many feet from the electric light, so many thousand miles from the sun. If you place such an instrument on the top of the camera, and screen it from the light from behind with a hood blackened inside, and so constructed that the opening for the light which falls upon it is the same field that you are taking a picture of, and count the revolutions, then you would only have to wait until that instrument makes the proper number of revolutions in a given time before you take your picture. The other more doubtful question is heat. Caloric rays are of no use to photographers, and the question is how far the caloric rays act upon the instrument. I have made experiments upon the radiometer; I tried it with different coloured glass, and found that red rays retard it more than violet rays. If it is only affected by heat, as some few assert, it is of no use for photographers; but I deny that. However, I wish to remark this, that the instrument I have is so sensitive that if you put your warm hand on it it will revolve, but in an opposite direction.

Mr. NEWTON: I have one or two negatives to exhibit. I made some experiments with the new developer first introduced by Mr. Henderson. His process, or the modification of it by Mr. Fry, was to make a saturated solution of ferrocyanide of potash and pyrogallie acid. He reduced it about one-half with water and added two grains of pyrogallie acid, for a stock solution. When he wished to develop, he took sufficient of that to flow his plate, and added a few drops of ammonia, and he claimed to have obtained very excellent results, reducing the time one-third. In my experiments I discarded the ammonia, and instead of making my stock solution with the pyro., I made it with the carbonate of soda solution added to the yellow prussiate. The reason why I reject ammonia in the developer, is because the ammonia is a very unstable chemical compound, whereas the carbonate of soda is a very permanent salt, especially after it has parted with its water of crystallization. The solutions I prepare by dissolving one ounce of ferro-cyanide in six

ounces of water, to which is added twenty grains to the ounce of carbonate of soda. When about to use I take sufficient to flow the plate, and add two or three grains of pyrogallie acid. I found, when using it on a newly prepared emulsion, a very little bromide of ammonium was necessary; but with an emulsion a month or two old, no bromide is required. I have made some fine instantaneous negatives with the developer, using emulsion about two years old. I have procured the ferro-cyanide from four different dealers, to determine whether the ordinary article in the market was, as a rule, reliable, and would give uniform results. So far, I have discovered no difference in the behaviour of the several samples obtained. I have not experimented sufficiently with dry plates to speak definitely, or not as positively as Mr. Fry, on this part of the subject. If, however, I was to advise at this present time, I should recommend the use of a small quantity of bromide when using it for developing dry plates.

Mr. WILLIS developed several prints by his platinum printing process, and read the following remarks on the subject:—"Two years ago I had the pleasure of introducing to you my first process for printing in platinum. This process necessitated the employment of silver, a gold toning bath, and hyposulphite of soda. It was found that unless the prepared paper had a preliminary coating of silver, the particles of metallic platinum reduced during development would not adhere well to the surface, but would partially float away. The image given by this process consisted of platinum with a trace of gold; but unless very carefully worked there was a tendency to produce prints containing silver also. Moreover, a sulpho-cyanide toning bath frequently gave yellowish whites, due to the formation of sulphocyanide of iron. The use of silver and hypo in the process was a blot which I was anxious to remove. After some experimenting I discovered that by adding a salt of platinum or iridium to the oxalate of potash developer, the use of silver could be dispensed with. In my new printing process, neither silver, gold, nor hypo is used. I will now proceed to illustrate the method of working. The sensitizer is made by mixing equal quantities of the following solutions:—1st. A solution of ferric oxalate; 2nd. A solution of potassic chloro-platinate. This mixture is spread on the paper by means of a pad of cotton-wool, or, better, by a piece of flannel wound around a soft rubber tube. As soon as the coated paper has become surface dry, the drying is completed before a fire or stove or in a hot cupboard. It is now ready for exposure. The exposure is made under a negative in the ordinary manner, the proper duration of exposure being determined by inspection; all details should be visible.

I may here remark that the sensitized paper may be kept in a calcined tube without any deterioration for at least six months.

The developer is made by mixing a solution of oxalate of potash with a solution of the platinum salt before mentioned. This mixture is now heated to nearly the boiling point, and the exposed prints are developed by floating them upon it for one or two seconds. After development the prints are simply washed in a weak solution of citric acid and then in water. The object of this washing is to remove the iron salt from the paper. The advantages by this process may be thus briefly enumerated: 1st. Absolute permanency of the prints. The image consists of metallic platinum only, and is untouched by any chemical agent save only warm *aqua regia*. 2nd. Its extreme simplicity, obvious to all. 3rd. Great certainty. Very little chance of failure even in inexperienced hands. 4th. Easy applicability to various surfaces, such as linen, cotton, satin, and ceramic wares.

Dr. VANDERWEYDE asked for the chemical reactions involved in this process.

Mr. WILLIS: This process is based on the following chemical reactions: 1st. A solution of ferrous-oxalate in protassic-oxalate instantly reduces the metal from salts of platinum. This reaction was discovered by me some years ago. 2nd. Ferric-oxalate under the action of light is reduced to ferrous-oxalate. This fact was well known very early in the history of photography. To explain how these reactions are made use of in the process I will call your attention to the composition of the sensitive coating applied to the paper. You will remember it was composed of a mixture of ferric oxalate and of a salt of platinum. Now if this paper be exposed to the action of light the ferric-oxalate will be reduced to ferrous-oxalate, but the platinum salt so intimately mixed with it will remain unaltered, so that, after such exposure to light, the paper will have a coating of ferrous-oxalate and platinum salt in place of the original coating of ferric-oxalate and the same salt. Now if we float or immerse this coated paper on which light has acted in a solution of potassic-oxalate the ferrous-oxalate

will be dissolved from the surface of the paper, but at the moment of its solution the ferrous oxalate will reduce *in situ* the metal from the salt of platinum with which it is so intimately mixed. It is easy to understand that if the coated paper be exposed to light under a negative, the ferrous-oxalate formed in those parts on which the light has acted will, when floated upon the potassic-oxalate solution, reduce the platinum salt in contact with it and leave a picture in metallic platinum.

Mr. MASON: In working this process, supposing you employ a printer and give him a certain number of negatives, could he make those prints as readily as he could make albumen prints, provided he is accustomed to working the process? Would he make them faster or as fast?

Mr. WILLIS: He would make them faster. The exposure is about one-third of the time required by silver printing. The meeting then adjourned.

Talk in the Studio.

ENGLISH MOUNT AND MANUFACTORY COMPANY (LIMITED).—The attention of photographers has recently been called by advertisement to a new company for the production of mounts, cards, &c. We notice from the report of the company that its prospects, as a company, are exceedingly promising, the accounts showing something like 15 per cent. on share capital, as well as the prospect of general success. Such a prospect is in every way satisfactory, as illustrative of the satisfactory conduct of the business of the company. Our readers will see in our business pages some details of this prospect of success, to which we now draw their attention, and shall further refer to the subject as information comes under our attention.

FIRE.—We regret to learn that a serious fire in Philadelphia has destroyed the premises and much stock of Messrs. Collins and Co., the chief house for the supply of cards and mounts to American photographers.

IMPROVEMENT IN SILVERING GLASS.—The plan of coating mirrors with a thin film of silver, though superior to the old amalgamation process, has some drawbacks. The ordinary treatment is as follows: The glass is laid on a horizontal table of cast iron covered with a woollen cloth and heated to 40° Centig. (104 deg. Fah.) On the glass, previously well cleaned, are poured successively a solution of tartaric acid, and then another of ammoniacal nitrate of silver. Under the influence of the heat the organic acid reduces the metallic salt, and after about twenty minutes the silver is deposited on the glass in adherent layers; the whole operation does not occupy more than an hour. The mirror is then dried, and the metal covered with a varnish sufficient to protect it from friction and the action of sulphur vapours, which blacken it. But silver deposited in this way often has an unpleasant yellowish reflection. M. Lenoir, of Paris, turned his attention to discovering a process which would obviate this drawback. He has succeeded by the following means. The glass, once silvered, is subjected to the action of a dilute solution of the double cyanide of mercury and potassium, when an amalgam of white and brilliant silver is formed, adhering strongly to the glass. To facilitate the operation and utilize all the silver employed, M. Lenoir, by a recent improvement, sprinkles the glass at the moment the mercurial solution is applied with a very fine powder of zinc, which precipitates the mercury and regulates the amalgamation. Mirrors thus treated no longer give, it is said, the yellowish images of the silver used alone, but the white and brilliant reflection of the old process, without the emanation of vapours which would be injurious to the men employed upon the operation.

To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY, 1880. In order to facilitate our labours in preparing the YEAR-BOOK OF PHOTOGRAPHY for next year, we shall be greatly obliged to those of our readers who can favour us with brief practical papers on subjects arising in their experience, so that our annual may be, as it is designed, a complete record of the progress of the year, and a trustworthy practical guide for the future. As the time approaches at which we must go to press, we shall be greatly obliged if copy can be sent without delay.

PERSEVERANCE.—Probably various causes have contributed to your failure. No. 1 is over-exposed, beyond a question. No. 2 is also over-exposed, but it is nearer the mark. No. 2 may, we think, be improved by intensifying; possibly No. 1 may also. Try, for intensifying, the preparation described by Mr. Edwards on another page. Mr. Edwards' intensifier is a modification of the iodide of mercury intensifier, and gives exceedingly good results. No. 3 seems to be under-exposed. You will note that there is no detail in the foliage; but this seems partly due to imperfect lighting. It is desirable, if possible, to have a direct light on subjects, like foliage, reflecting very little light. It is possible that No. 2 would have been a good negative with more judicious development. In such a case, use a larger proportion of pyrogallie acid, which will give more force and "pluck." It is possible that some of the plates may have been faulty, as you suspect, but it is more probable that the fault was in the treatment of an inexperienced hand.

CAPTAIN TURTON.—You will find the pyro developer better, we think, for collodion prints on opal than iron. A simple form of the developer consists in 2 grains of pyrogallie acid, and 20 minims of acetic acid in an ounce of water. A very good formula consists in 3 grains of pyro in an ounce of water, 1½ grains of citric acid, and 20 minims of acetic acid. 2. So far as we know, our impression of the platinotype process is favourable; but we do not know much. Some of the prints in the Exhibition were very good. The manipulations, so far as we have seen them, seem simple and easy. As to whether cheap or not, we do not know. 3. We have heard of gelatine plates being successfully worked in plenty of orange light; but the attempt is not safe. Better try a developing tray with ruby glass top. 4. The firm in question do manufacture collodion bromide plates as well as gelatine plates. Probably they were sent out as bromide emulsion plates. The enlargements by the firm you name are, we believe, produced by the Autotype Company. We believe the second firm you name trustworthy.

C. B.—You will judge best by trying; that is, placing the tint upon a few different colours. We should suggest maroon as a good colour. It by contrast will give the colour of the prints a warm black effect. If you wish to make the tone of the prints look as warm as possible, then use a greyish green velvet, or a simple grey tint.

W. B. C.—Your letter was received too late last week for a full answer. We recommended you to obtain a work on the magic lantern published by the Stereoscopic Co., or one by Mr. Chadwick, whose address is Princes Bridge Iron Works, Manchester. See his advertisement of an Oxygen Generator in last issue of NEWS. Oxygen is made by mixing intimately four parts of chlorate of potash with one part of powdered black oxide of manganese. The mixture is placed in a retort suited for the purpose, which is placed on a moderate fire. A tube passing from the top of the retort conveys the gas as it is generated into a purifier filled with water, and the gas after purification passes through another tube into the gas bag. The process is one requiring care, and is better not undertaken by an entirely inexperienced person, as it involves some danger.

NEMO.—We scarcely understand the phrase "stopping negatives," but glean from other remarks in your note that you wish to coat some portions so as to retard the printing. This can be done in various ways. A little collodion or varnish tinted by means of an aniline or other non-actinic colour applied at the back of the glass answers well; or a little tissue paper or tracing paper is very efficient.

A. L. E. D.—In our next.

Several correspondents in our next.

PATENTS.

COMPILED BY MR. DES VOEUX,

Patents, Trade Marks, and Design Agent, 32, Southampton Buildings, Chancery Lane, London.

No. 4733. CHARLES GUILLAUME PETIT, of Paris, France, "Improvements in Photo-typography." Dated 21st November, 1879.

No. 4784. JOSEPH HOWARD BLAIRS, of Huddersfield, Yorkshire, "Improvements in Photographic Apparatus." Dated 24th November, 1879.

PHOTOGRAPHS REGISTERED.

- Mr. G. STEVENS, Holyhead,
Photograph of Rev. Edward Day.
- Mr. J. ZINNENLAUF, Bristol,
Photograph of the Severn Railway.
- Mr. S. W. TALBOT, Ramsgate,
Fourteen Photographs—Designs for Christmas Cards.
- Mr. A. BOUCHER, Brighton,
Three Photographs of Madame Nilsson.
Photograph of General D. Massey.
Photograph of Miss Robertson.
- Messrs. JACKSON & PLEUS, Crook, Durham,
Photograph of Mrs. Macmahon.

The Photographic News.

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THE OPERATING ROOM AND DARK ROOM.

THERE is no part of the photographer's premises of greater importance than the operating room and dark room, and none upon which so little has been said and written. We never remember to have met with a paper or discussion on the subject at a Society meeting; nor have we met with anything written on the subject except an occasional chapter in some of the older manuals. Hence there are no definitely accepted canons of proportion and construction, no plans and arrangement, the result of accumulated experience, collected and compared. As a rule, each photographer makes and arranges his dark room according to his own ideas—or, rather, according to the exigencies of space and facility which his premises present. It is not usually regarded as of vital importance, and hence any corner or cupboard which can be spared is made available for the purpose.

In offering a few remarks on the subject we shall suggest rather than dogmatize; but on one or two points we shall speak imperatively. It is very desirable that more space than is absolutely necessarily usually devoted to the department should be given, and it is that it should be well ventilated. The photographer inevitably spends many hours in the operating room, and the work will be better done, and the health materially benefitted, if the room be airy and well ventilated. In how many establishments is the dark room a small cupboard which chances to be handy, or an inconvenient corner partitioned off from the studio! In how many, also, is it made the receptacle for all kinds of disused apparatus, empty packing cases, cracked dishes, and all kinds of rubbish which gradually accumulates!

We have spoken of the operating room and dark room as distinct places. It is only too common to have a dark room only, in which various of the operations belong to the operating room—such as coating the plates, &c.—are conducted. But connected with every photographic establishment there should be an operating room, a portion of which may be made into a dark room. Before we enter, however, into details of our own conception of a convenient operating room, we will quote the description given by Mr. Lake Price, in his excellent Manual, of what an operating room should be. He says:—

"Small and inconvenient dens may be made to do duty on occasion; but if it be possible to obtain a certain space, say sixteen feet by twelve, for the purpose, it will be well bestowed, both in the increased convenience for the production of the negatives, and for the health of the operator, by the superior ventilation it affords.

"The aspect should, if possible, be N.E., to avoid the direct rays of the sun upon its yellow blinds; the window should be glazed with yellow glass, by the light transmitted through which paper may be excited and bath solution prepared; but in operating for the camera, a curtain of one, two, or three thicknesses of yellow tannin in addition will be found necessary, according to the greater or less sensitiveness of the preparations.

"The room should have a fire-place for warmth in winter, and ventilation, or drying of excited papers; and if there is a small boiler for hot water to the stove, it will be found advantageous in a variety of manipulations.

"A large Arnott's ventilator at the top of the room in the flue, and an air-shaft, diaphragmed, not admitting light, with small flap doors to close when desired, at the level of the floor, near the developing sink, will assist to carry off the fumes of the chemicals.

"Two sinks lined with gutta-percha, with wastepipes of the same material, should be fitted entirely separated from each other; one for developing the picture, the other for standing the negatives in to steep in water, which should be laid on with several taps to both sinks. Gas likewise should be fitted along the sinks with deep yellow glass chimneys to the burners. Shelves for bottles, and a well-made close-fitting cupboard for chemicals, are wanted; at the same time it is especially advised not to make the shelves of the dark room receptacles for all the nameless rubbish apt to accumulate in such a locality, and thereby establish dust-traps, to the certain deterioration or destruction of future pictures.

"Let the dark room only contain those things which legitimately belong to it; let the shelves, &c., be washed frequently and kept free from dust, the sinks in the cleanest condition, and the floor covered with oilcloth, as being the material with the most unbroken surface and most easily purified from dirt.

"It is imperatively necessary that not the slightest gleam of white light be allowed to penetrate into this room whilst operating; plates may be spoiled one after the other by a half-open keyhole opposite them when draining, or by a forgotten cranny at the bottom of a door. Curtains to remedy this are not proper; they accumulate dust in their folds, and the movements on drawing them disperses its moths though the air of the room, to settle ultimately on the film; if the doors are leathered, or have wooden fillets screwed round them, either are quite as effectual in excluding light, and more cleanly.

"Note, that if lead linings or pipes are used for the sinks, they will be acted upon by the chemicals, will soon be full of holes, and the vapours of their combined action are most unwholesome."

We shall return to the subject in a future issue.

PHOTOGRAPHY IN AND OUT OF THE STUDIO

THE PHOTO-ASTRONOMICAL OBSERVATORY AT MEUDON—THE INTENSIFYING OF GELATINE NEGATIVES—PHOTOGRAPHIC ILLUSTRATIONS IN NEWSPAPERS—A SCIENTIFIC SOLDIER.

The Photo-Astronomical Observatory at Meudon.—M. Janssen, the well-known French astronomer, is making the most of his advantages at Meudon. The chateau, which lies a few miles from Paris in a pleasant park, was delivered over—what remained of it after the bombardment by the Prussians—for a photo-astronomical observatory, and M. Janssen, by constant solicitation, has at last induced the French Government to build him a well-constructed observatory. The work has begun in good earnest, but for the winter the operations are suspended, and M. Janssen will have to wait another year before his photo-astronomical laboratory is finished. In the meantime, as we know, M. Janssen has done some good work, and every day, when the sun shines, a series of photographs of the solar disc are obtained. He has an automatic instrument, worked by a weight, which will take six photographs of the sun every twenty-four hours with a nine-inch refractor. We know how rapidly M. Janssen can manage his exposures. He has reduced them to a $\frac{1}{2000}$ of a second, and by this means is enabled to secure something more than a bald solarised disc, resembling a huge white wafer. The curtailment of the exposure prevents detail from being lost, and he has succeeded in securing solar pictures with characteristics which

furnish the groundwork for further astronomical study. Meudon is far more favourably situated than Greenwich as an observatory, for not only is the chateau much more distant from factories and smoke than our own Royal Observatory, but the French metropolis itself gives off far less smoke from its chimneys. Again, there is less chance of fog, which with us is for ever setting over the valley of the Thames, and enveloping Greenwich Hill from top to bottom. But Meudon is not altogether free from thick weather, and just now we hear that M. Janssen has been unable to get a photograph of the sun for days together. His instruments are brought to a standstill, and his staff of assistants are out of work.

The Intensifying of Gelatine Negatives.—Mr. B. J. Edwards' letter, which we published last week, contains full details for intensifying gelatine negatives, and although we cannot admit that it is the only formula in existence which succeeds, we will frankly state that his intensifier acts admirably. We ourselves have tried it on half-a-dozen thin and weak negatives, and transformed these without delay into vigorous plates. In fact, it makes nothing into something. One of the chief difficulties that workers with gelatine plates experience is lack of density, and in the early days many a plate was declared useless which, under treatment of an intensifier such as Mr. B. J. Edwards gives us, rapidly becomes bright and vigorous. For the purpose of experiment, we employed some gelatine plates which had been developed a twelvemonth since, and had been lying neglected and forgotten for the reason that they were too weak and ghostly. They were, after suitable washing, treated in the manner indicated by Mr. Edwards, and within a few minutes transformed, as we have said, into serviceable negatives. Our advice, therefore, is to copy Mr. Edwards' instructions into the laboratory note-book as something well worthy of a place in that record.

Photographic Illustrations in Newspapers.—*Life* continues to present its reader with some excellent pictures, which are stated to be produced by a photo-type process. A large portrait of the Princess of Wales is one of the last, and this is one of the finest productions of the sort that we have seen. There can be little doubt that they are the result of a collogotype process of some sort, and the pictures bear a striking resemblance to those early prints that were produced so successfully by Garnier and Tessié du Motay before Albertype and Lichtdruck were heard of. The fact that these fine photographs may be regarded as permanent, while they are certainly the first mechanically-printed portraits of large size that have been issued with a public newspaper, is a matter of singular importance, since we may now be said to have reached a new era in photographic publication. The issue of portraits by the Woodbury process was distinctly a step in this direction, but in this case only portraits of small dimensions were issued with the newspaper, and, moreover, like the ordinary photograph, it was necessary to mount them. The photographs, on the other hand, that are issued with *Life*, and are evidently produced in Paris, are large prints direct from the press, and as stable as the letter-press with which they are issued. They undoubtedly prove that we have made a further step of advancement in photographic illustration.

A Scientific Soldier.—We are glad to hear that the Company of Royal Engineers, or rather Sappers and Miners, as they are still called in India, which General Roberts has with him in Cabul, have the means wherewith to take a series of views of that capital. Although our soldiers have before occupied the Afghan capital and wintered there, we have, strange to say, but little record of its characteristics. A diary that was kept by Lady Sale is well nigh the only trustworthy information that exists on the subject. On the present occasion we have fortunately in our leader, Sir Frederick Roberts, a scientific soldier who is likely to take every advantage of his military position, and will assiduously employ the camera as an aid in surveying, as well as illustrating the characteristics of the country around. It is very

well to talk of a mountainous country and the surmounting of lofty passes, but until we have a picture of them before us we never quite realise the difficulties. General Roberts, to get where he is, had to pass with his artillery and stores over the Shaturgarden a pass 11,000 feet in height, a feat in Europe of which a member of the Alpine Club would feel proud. The photographs in the last Exhibition in Pall Mall, imperfect as they might have been from an art point of view, depict very graphically the difficulties of the road up the Khyber Pass and the caggy height which had to be surmounted before the fortress of Ali Musjid could be stormed. General Roberts will assuredly let us have some photographs of the Bala Hisar, and the city of Cabul, as also of the mountain ranges which command the city on every side. He it was whom we have to thank for the introduction of sunshine signals into the army. The Mance heliograph would never have been at work at Ekowe if General Roberts had not appreciated the advantages of the system. Some six years ago, when he was Quarter-Master-General in Bengal, the Mance instrument was submitted simultaneously to India and the Horse Guards at home. The latter rejected it as impracticable, but General (then Colonel) Roberts ordered half a dozen instruments to be procured, and some Sappers to be at once instructed in their use. It was those instruments, and those Sappers, who afterwards stood the general in good stead in the Kuram Valley, when last year he was in command of that force, and managed by reflected sunshine to maintain telegraphic communication throughout the whole length of the valley. His colleague, Sir Sam Browne, telegraphed the taking of Ali Musjid to Peshawar by a mirror established on the fallen fortress, and we all know how later in Zululand, Colonel Pearson, locked up in Ekowe, was able to communicate in the same way to his chief on the Tugela. The telegraph communication with Cabul, as we know, has recently been cut, but we may be quite sure that before long General Roberts will have established a mirror station on one of the Cabul heights, to communicate with his friends on the Khyber road. Signalling by sunshine has some disadvantages, no doubt, as a system of telegraphy, the necessity for clear weather being one of them; but communication cannot be cut by an enemy, it must be remembered, and this is an invaluable feature of the heliograph.

THE PHOTOGRAPHIC PRIZE.

WHO GAVE IT, WHO WON IT, AND WHAT CAME OF IT.

BY GEO' BRADFORD.

ST. LOE! The romantic name of a very pretty, cosy, and thriving market town in the midland counties; indeed, St. Loe to the full carries out the romance of its name, being, as it is, surrounded by far hills, green fields, and shadowy woods. Numberless are the murmuring rills that brawl around it; while the placid Loe meanders right through its centre, and thus, in its course, having caused at some remote period of the dark ages the erection of that wonderful piece of architecture—the old stone bridge. The latter, with the dilapidated cross in the market place, were the two antiquities of St. Loe. St. Loe, like all other little market towns, might be said to slumber six days out of the week, but on the seventh, when it did wake—the market day—it awoke with a vengeance! From early morn until dewy eve it roared and bustled—bellowed and bartered—it swaggered into booths—it bragged—it blustered and brawled in a manner most unseemly; it let its romance—it lost its poetry, and, in short, would have, in the eyes of a casual observer, appeared to be neither more nor less than a small edition of Sodom and Gomorrah. Nevertheless, as the stars appeared, the rude sounds gradually stopped, and with the faint low of the weary kine on the distant turnpike, or the soft bleat of the huddled sheep on the common, St. Loe returned to its sleepy self, and dozed away for another week amidst its far hills, green fields, and shadowy woods. Only upon two other occasions did St. Loe make an effort at waking up, viz., on its Flower Show and its Cat and Dog Show.

Such a thriving town as St. Loe you may suppose could not be long without a resident photographer; still, so it was; it had had flying visits from gentlemen of the camera, and some-

times its markets were inundated by a few Bohemians who did a roaring trade in glass pictures; but it was only lately that Jenkins took up a permanent abode there. He was a quiet painstaking man—an obliging man—indeed, nothing gave him greater trouble than the thought of any of his customers being dissatisfied; he would have granted sittings for weeks on end, rather than let any one go away grumbling. Now you know this is the proper disposition to succeed if your painstaking and obliging be allied with tact. I am afraid Jenkins was too simple to know even the meaning of the word tact, else why should he have been induced to bestow a photographic prize to the winner of the two-year-old tabby at the St. Loe Cat and Dog Show? I cannot explain to you the circumstances that led Jenkins to take such a step, but it is a melancholy fact that he did it. I believe that his general impression was that it would be a cheap way of advertising, and, of a consequence, increase his business.

As the year drew near its close, the Cat and Dog Show had its day, and towards the close of that said day it was known all through St. Loe that Peter Anketel had won Jenkins' prize by the perfections of his longed-haired, long-tailed Angora cat. Peter Anketel was a tailor, and withal a most extraordinary sort of a fellow. I really don't know but what I should have left the extra out, and said most ordinary fellow, for Peter was ill-made, ill-read, and very badly bred, with a genuine love for nothing except his beer and his cat; and, upon second thoughts, I fancy these are accomplishments belonging to an ordinary fellow.

It was a dull gloomy Monday morning in December that Peter Anketel walked into Jenkins' studio with a pleasant grin on his face, and a small hamper in his hand. After wiping away a drop or two of the last mug that happened to still cling lovingly to his scraggy beard, he exclaimed, "Morning, Mr. Jenkins; I've come after that 'ere prize!"

"Ah, to be sure—to be sure!" quoth Jenkins, cracking his knuckles pleasantly; "you are the winner!"

"No, I beant!" answered the tailor, bringing his hand with a thump down on the hamper; "but this 'ere cat is!"

"Yes—y-es!" exclaimed Jenkins; "but you know that it is you that is to sit for the photograph!"

"How's that, man?" cried the tailor, looking suspiciously at Jenkins. "Tell'ee I ain't the winner. This 'ere cat is the winner, and it's he as is to be photographed!"

Jenkins tried to explain that it was the owner of the cat, and not the feline itself, that such a prize was meant for; and in his eagerness to eschew the job of having to try such a mad affair as photographing a cat that had been closed up in a hamper for an hour or so, and thumped about until it was nearly wild, and on a black December day, he set to work to wheedle Peter Anketel into sitting himself. When he discovered that Peter was married, as a further inducement he offered to take them both together; but it was all to no purpose.

"Now you just stop your gammon!" roared Peter at length. "You be a stranger in these parts, an' yer not up to our ways. We knows summat up this way, I kin tell ye. If a horse wins a race, it be the horse that wins, and not the measter; an' if a cat win a prize, why don't ye, gie the cat the prize, an' ha'e done wi' it. Is yer doors an' winders shut?—because she's kind o' wild when she fust gets out. Now then my boo-ty!"

And with these words, he opened the hamper, and, with a snarl, out bounded the great cat and commenced to inspect and smell the furniture.

"Haint sho a boo-ty?" cried the tailor, gazing at her admiringly. "And look here, sir, I wants her took stood up!"

Jenkins sighed, and went into his dark room, vowing that he would take better care of the wording of the next prize he gave. Jenkins brought all his patience to bear upon the absurd case. He at first tried to make friends with the cat, but hastily abstained upon seeing her lay back her ears and show her teeth.

"Nae, thee mustn't do that; she have a nasty way wi' strangers," warned Peter.

Fifteen times did Jenkins try that cat, and fifteen times Jenkins failed! What Jenkins said when he was in the dark room I do not know, but it was not poetry. At length his patience came to an end. With tears in his eyes he addressed Anketel, who, to make matters worse, sat smoking, thus filling the little glass room with additional fog.

"My dear sir, it is a moral impossibility for me or any one to photograph that cat; but I am a man of peace, and I am willing to photograph you and your family—your grandfather and your grandmother, your uncles, aunts, brothers, sisters, cousins, your children, your grandchildren—in fact, all your royal family, in one immense group as an equivalent. Is it a bargain?"

"Dang it all!" quoth the tailor, scratching his head, "it's a fair offer; but—*jest try the cat again*, will ye, and I'll do my best to keep her still?"

Jenkins groaned, but, Job-like, tried another plato. He whistled at the cat, he roared, he screamed, he clashed the lid of the fire stove; he sprang into the air, and came down yelling—he got excited! This excitement was evidently contagious, for Peter Anketel so far forgot himself as to give Mrs. Angora a good cuff. That cuff put a stop to the whole proceedings, for Mrs. Puss, in an awful state of excitement herself, and totally bewildered by the unearthly sounds, snapped at her master, and inflicted a sharp bite on the forefinger of his left hand. Jenkins' shouts had a joyful ring in them when he perceived the blood Sanguinary wretch! He saw that his hour of triumph had arrived.

"A most dangerous thing to be bitten by a cat," quoth he, grimly. "I have known of several awful deaths through such. The only preventive is the death of the cat. Of course, you can please yourself; but if I were in your place, I would not rest until I had destroyed that cat!"

London laughed the tailor as he scornfully waved his gory hand, and exclaimed: "Tell'ee what—yer a duffer. I'll bet the neebours know what sort o' man you are. I'll show 'em what sort o' photographer yer are! Yer a duffer!"

And with a good many worse expressions than these, Peter Anketel, the tailor, stuffed his cat into his hamper, then, with one withering look, walked away straight to the top of the Three Bells. Jenkins watched him disappear under the archway, then muttered: "Duffer? By Heavens! but I shall be revenged on that fellow—I shall not rest until he has drowned his cat!"

How Jenkins managed his part I am about to tell: the means he used you can easily guess it. Hardly had Peter Anketel commenced his sentiments regarding the prize and Jenkins to a gaping audience of loafers, than the landlady casually remarked—

"What is the matter with your hand, Peter?"

"Cat bit it when I was trying to hold him for that fool!"

"Cat drowned?"

Peter laughed, but not quite so heartily or so scornfully as he had done in Jenkins' glass room. And now the landlady retailed a few harrowing instances of deaths resulting from such bites, some of which brought queer, creeping sensations up and down the small of Peter's back. However, Peter shrugged his shoulders, and in a loud voice called for more beer. In vain Peter tried to turn the conversation. If for a short time his abuse of Jenkins was overpowering, so that the company could not even get a word slipped in edgeways, still the flood of his eloquence was sure to come upon the final denouement and the bite. Or if politics claimed the company's attention, so that the prize and the cat and the bite were all forgotten, it was singular—in fact, one of those singular occurrences that are remembered even until this day in the annals of St. Loe gossip—it was singular, I say, that some one was sure to drop in and remark the two bloody punctures on Peter Anketel's forefinger. Then followed the unvarying question: "Cat drowned?"

This constant dropping began to have its effect. Peter no longer laughed, and ultimately he did not wait for acquaintances to observe the marks by chance, but showed them to them, and in a mysterious whisper asked their opinion. Then, of course, came that unvarying verdict—Drown the cat!

It was likewise a singular thing on that eventful day that Jenkins, the peaceable, the patient, was strangely excited; and it was remarked that his face was often seen glued to the smoky window of the bar-tap, and that it wore a fiendish grin.

Through the ale and the horrible tales that he imbibed, Peter's imagination became so excited that he felt sure he was suffering from the earlier symptoms of approaching dissolution. So he drank and talked hydrophobia until evening, when he resolved, as a final test, to appeal to the common sense of his good friend Mendem, the shoemaker, and abide by his decision. If he said with the others, he would have that cat's life that very night, or perish in the attempt. Full of ale and trouble, Peter at length arose to seek his friend. Now it was cruel of someone hidden in a door-way, to cry mew-mew as he passed! The cry made his hair stand on end, and he well nigh burst into tears as he thought on the depravity of human nature, that it could so indulge itself at the expense of a fellow-creature whose life was, so to speak, hanging in the balance. When Peter had told his now lengthy story to the shoemaker, the latter, whose

face had remained immovable during the recital, albeit Peter tried his hardest to make his position as tragic as possible, arose slowly from his seat, and whistling softly to himself, reached down a country paper, and pointing to a paragraph with his forefinger, handed it to Peter.

Peter tremblingly read the title, "Horrible death from the bite of a cat!" What Peter did or said, I cannot exactly tell, but perhaps the sequel will show.

The moon was shining peacefully down upon the lazy Loe and its old stoue bridge, when a man stepped forth from a gloomy doorway: his movements were stealthy, and he bore beneath his arm a bundle—a mysterious bundle from whence proceeded strange smothered noises. The long High Street of St. Loe was deserted, the lights had all but disappeared from the windows of the dwellers, and nothing was heard but the slow and solemn tread of the watchman as he paced his weary round. With a precaution that betokened guilt did that wretched man proceed towards the brink of silent running Loe.

Nearer and nearer! There was no mistaking the wretch's truculent manner. He was bent upon crime.

He now stood on the brink. A sudden motion—a heave and a splash!

Simultaneous with the splash a man very like Jenkins jumped up from behind the buttress of the bridge, and shouted, "Help! Help! Someone drowning!"

And he who had done the deed, fled—fled as swift as the wind, and in his headlong career overturned the guardian of the night, who, seeing a man running as if for life, concluded that he had at least committed murder; so instantly gaining his feet he made after him with all speed. He was a big policeman, and the sound of his feet made an awful noise in the silent streets. People heard and wondered—jumped out of bed—threw open the windows—and, spying the excited chase, sprang into what clothes they could lay their hands on, and followed suit.

It is a well-known fact that there is nothing easier to be obtained than a crowd; and in this instance the man who had disposed of the mysterious bag in the silent waters of the Loe found himself the leader of as motley a crowd as was Falstaff's regiment. He doubled his speed, and flew rather than ran. So well did he succeed, that he dashed into the dark doorway from whence he had so lately emerged before the foremost of them had turned the corner. Before they had arrived, he had double-locked the door, and was eyeing them cautiously from the corner of the first floor window.

"Where the devil has he got to?" asked a man who was easily distinguished by having nothing on but a shirt and an ulster.

"Lord knows!" gasped the policeman.

"What did he do?" again asked the ulster and shirt.

"Lord knows!" again gasped the policeman.

"What on earth did you chase him for, then?" yelled the excited mob.

"Because he run like the devil!" replied the policeman.

And Jenkins, the photographer, went to bed chuckling that night, and did not even tell his wife until next morning.

The next day happened to be fine, clear, and frosty, so that Jenkins expected to do a little trade. Towards noon, who walks into his studio but Peter Anketel, with his Sunday coat on?

"Look here, Mister!" he exclaimed; "I've changed my mind about that 'ere prize. I've come to be took myself."

"Sorry to say," replied Jenkins the painstaking and obliging, in firm accents, "that I have changed my mind, too, and I am determined that I shall only photograph the cat. So go and fetch it!"

Anketel slunk towards the door muttering.

"How is the bite?" quoth Jenkins. "Feel any bad effects—eh?"

"Oh, don't thee and thy prize too!" roared the exasperated tailor, as he rushed off in a rage.

And then Jenkins, the painstaking and obliging, went up and down in St. Loe, and told the inhabitants all about his prize—who gave it—who won it—and what came of it.

GERMAN PYROGALLIC ACID.

In a recent issue of the *Photographic News* we published a letter from Mr. Fry, in which he expressed a conviction that thinness in gelatine negatives was often the result of using German pyrogallie acid. Messrs. Schering, of Berlin, regarding this as a personal allusion, have submitted a

sample of their pyrogallie acid, together with an English sample, to Dr. Vogel for comparison. He has sent us the following statement of results.

Two kinds of pyrogallie acid were handed to me, the one from the chemical manufactory (on shares) of E. Schering, the other from the manufactory of—*, in London. I was also informed that a London examination had shown the English pyrogallie acid to possess towards bromide of silver a power of reduction far greater than that of the German acid. How they had been tested with reference to bromide of silver is not stated; I therefore wish to make a few introductory remarks.

Bromide of silver can be reduced by pyrogallie acid only in the presence of alkalis, and the intensity of the reduction increases in the same proportion as the quantity of alkali present, the concentration of the solution, and the influence of light are increased.

Hence, if two quantities of pyrogallie acid were to be tested as to their respective powers of reduction, not only the weight of the pyrogallie acid, but also that of the ammonia (or alkali), and the degree of concentration have to be exactly equal in each case; moreover, the influence of light, as far as possible, has to be excluded, otherwise considerable sources of error will be created. On the other hand, pyrogallie acid in the presence of alkalis is also oxidized by the oxygen of the air. If, therefore, pyrogallie acid be tested in the presence of air, the latter will destroy by oxidation a portion of the acid, which will increase in the same proportion as the quantity of air present. Hence, in the operations of testing, differences will arise even from the employment of vessels of unequal size.

In order to avoid all these sources of error, I proceeded as follows:—

I took two bottles of yellow glass which excluded such rays of light as might have caused a chemical change, both holding 200 cub. cents. Into each bottle I poured exactly 8.5 cub. cents. of a solution of nitrate of silver which contained 1.2 grammes of nitrate of silver. To this were added 6 cub. cents. of bromide ammonia solution. It had been previously ascertained that 5.9 cub. cents. of the said bromide of ammonia solution were capable of precipitating the above mentioned argentic nitrate solution. Hence the bromide of ammonia remained a trifle in excess—that is to say, to an equal amount in the two testing liquors. Then to each of the two testing liquors 2 cub. cents. of ammonia were added, and, exactly at the same time, to one of them a solution of 1 gram of Schering's pyrogallie acid, in 10 cub. cents. of alcohol; to the other a solution of 1 gram of English pyrogallie acid in 10 cub. cents. of alcohol. Both were afterwards, during the space of ten minutes, contemporaneously and uniformly shaken in a closed bottle. Then each liquid was emptied into a glass containing sulphuric acid in sufficient quantity to saturate the given amount of ammonia. By means of this acid the ammonia was at once neutralized, and thereby the reducing power of the pyrogallie acid upon bromide of silver instantaneously checked. Each of the amounts of bromide of silver thus treated was then brought upon a filter and carefully washed out, then both the filters, together with the precipitates, placed into glass vessels, where diluted nitric acid (sp. gr. 1.1) was poured upon them.

It has previously been established that the diluted acid on being heated does not attack the bromide of silver, but nearly solves the admixture of silver produced by reduction.

Through application of heat, this solving of the reduced silver was in both cases effected, and then its amount determined by trituration with a solution of potassic iodide according to a well-known method of silver trituration. With the English acid I obtained 896 grams, with Schering's 937 grams of argentic nitrate solved.

The result shows that under identical circumstances the reducing capacity of Schering's pyrogallie acid is considerably greater than that of the English acid, and from

* The name of a highly respectable firm of manufacturing chemists is here given.—Ed.

the mentioned results it follows that the English pyrogallie acid reduced $74\frac{3}{4}$ per cent., Schering's $78\frac{1}{2}$ per cent. of the argentic bromide employed. If, therefore, it be asserted that the English pyrogallie acid possesses greater reducing power than that of Schering, the assertion is, in my opinion, an erroneous one caused by errors in testing. Had the English pyrogallie acid really greater powers of reduction than Schering's it would show itself in the most conclusive manner when gelatine dry plates are being developed. But if a dry plate be exposed in the stereo apparatus, cut into two, then one half brought out with Schering's, the other with English pyrogallie acid, while exactly the same amounts of potass bromide, water, and ammonia are added, a superior effect of the English pyrogallie acid is not in the least perceptible. Both halves are brought out with equal speed and intensity, a fact which proves that in employing very small quantities of ammonia (as is usual in bringing out dry negatives) the difference of the reducing capacities, as shown in the above described quantitative testing, is not so conspicuous. I must likewise oppose the assertion that the pictures developed with English pyrogallie acid are more intensely black than those produced with Schering's pyrogallie acid. If one proceeds under circumstances exactly alike, the intensity of the negatives obtained must also be the same.

This I certify truthfully,

(Signed) PROFESSOR DR. J. VOGEL.

Berlin, 4th November, 1879.

[It is scarcely necessary to point out here that no name of any German chemical manufacturer was mentioned in Mr. Fry's letter, and unless Messrs. Schering are the sole manufacturers of pyrogallie acid in Germany, they were not necessarily implicated in the imputed charge. We have pleasure, however, in giving publicity to Dr. Vogel's interesting results. It should be remembered in all operations with pyrogallie acid that its age and conditions are important factors in its activity. An old sample which has had some exposure to the atmosphere loses much of its reducing power.—Ed.]

ART AND ITS RELATION TO PHOTOGRAPHY.

A SERIES OF PAPERS.

NO. III.

BY AN ART STUDENT.

BEFORE commencing a portrait, it is essential, then, that the line upon which it is based is clearly mapped out in the artist's mind;—for to commence a picture without any definite object in view; to place the model and reproduce it, giving prominence and importance to those points which ought to be subordinate; to pose it without having thoroughly fixed the particular place of feeling you wish to throw into the face; to arrange the draperies and the body with hardly any knowledge of the forms that body takes without its covering;—to begin work under these disadvantages must inevitably result in failure. If we examine the works of the great masters, it will be found that there is an underlying current, so to speak, throughout all their compositions—a key, or high note, which governs their work in the same way that the leader of an orchestra gives the note whereby the rest are enabled to play in unison. Without this starting point there would be bound to be a great amount of discord; and in the same manner, without this note or starting point, all art work would contain discordant parts. The object, then, is to find the key to the composition, and to arrange it accordingly. If it is repose, let repose pervade the picture, and *vice versa*. And here I would add, there is necessarily a limit beyond which it is unadvisable to attempt to go. No matter how high the artist's imagination may soar—it may be a most lofty and noble conception—yet if unsuitable for pictorial display, or unattainable, *there is nothing to show, or the effort,*

being beyond the capabilities, ends in the ridiculous or repulsive. Whenever this happens, although the result may be *nil*, a lesson has been taught and fault guarded against for the future. At present there are samples of photographic failures to be seen daily in the London shop windows. One in particular is that of a well-known and able actor, who is represented as in the last stage of *delirium tremens*. The aim has been high so far, but the attempt an undoubted failure, descending to the level of the absurd, for the simple reason that it is quite unsuitable. There is none of this absurdity to be found in the actor on the stage, however; here we have the repulsive as a contrast; not but what the representation of the actor is true and life-like, but the fault lies in the fact that such an imitation, no matter how true it be, is only fit for those whose taste is for the morbid, and quite unsuitable to be the subject of a pictorial composition. It is one which no cultivated person could delight in.

Art has for its object the elevation of our species, and no good can ever come of accustoming our eyes to dwell upon scenes of horror. Such a theme as a man in the last throes of a hideous disease can never rise to the sublime; and if attempted to be reproduced in a picture by any other than a master's hand, it is bound to partake of the ridiculous; and as either is objectionable, it were better that such effort should be left alone. True, Hogarth, in the "Rake's Progress," introduces us to the interior of a mad-house; yet look how he has counterbalanced the dreadful parts of the picture—the women lovingly tending and soothing the poor lunatic, while the repulsive feeling with which we might be inclined to view the others is taken away when we perceive how little they feel their position—how the possession of a few trumpery playthings has the effect of keeping them employed and alleviating their misery. To depict facial expression—to give grace and dignity to the carriage of the figure—to cause the eye to dwell upon those points on which it is intended it should dwell, are some among the many difficulties which it is essential the artist should try to surmount. In painting there are many methods of obtaining the relief, and consequently the importance, which is due to the head. Rembrandt's style is one of the most masterly. By throwing the entire figure into shade, he thus obtains and concentrates the light upon the face; but there is not a particle of cutting line to be found. Unlike the photographic Rembrandt—which has usually one-half of the face a patch of unbroken white against a dark background—everything is softened away. The light plays upon the projecting points of the mask, throwing them forward; from thence the gloom and shadow slowly gather. There is no want of roundness, however, in the deepest parts—no lack of detail: if we look for it, it is there, but does not thrust itself on the eye. The head of a Capuchin Monk, in the National Gallery, Trafalgar Square, is well worthy of a careful study, showing, as it does, how it is possible to combine high lights and deep shadows, the details fully wrought out in each, yet subservient to the whole, and the head looming grandly forth, and rivetting the entire attention.

Correspondence.

INTENSIFYING GELATINE NEGATIVES.

DEAR SIR,—I believe the formula for intensifying gelatine negatives by the modified method of mercury iodide was given by Mr. B. J. Edwards to the public, and he is most certainly in error by stating that I described it as my own. The formula I gave was that which worked best with me, and I defy Mr. Edwards to prove that the formula I gave is anything but correct. I tried the formula given by Mr. Edwards a short time since in another journal, and after carefully carrying out the directions there given, I managed

to spoil three pints of solution; so I set to work, and began with 60 grains of bichloride of mercury dissolved in 4 ounces of distilled water; then I dissolved 110 grains of potassium iodide, and added, which did not quite dissolve the red iodide of mercury that was formed, so by adding 10 grains at a time I just obtained what Mr. Edwards had described, *i.e.*, that the red precipitate should be nearly dissolved; 140 grains of iodide of potassium gave this result; then by adding 40 grains of hypo dissolved in 2 ounces of water (and not, as Mr. Edwards gave it, put the crystals into the solution) I found that it gave a clear solution; and whether correct or not in Mr. Edwards's estimation, it did intensify several weak gelatine negatives to perfection; and thus, having found the proportion that gave me the best results, I published it for the benefit of others; and further than this, it now forms a part of the instructions sent out with my gelatino plates.

Undoubtedly, the hypo-mercurial intensifier is due to Mr. Edwards, but I do think that he has no occasion whatever (having made it public) to snap at any other person for making a modification of it to suit a desired end.—Very truly yours,

A. J. JARMAN.

41, Queen Street, Ramsgate.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society took place at the Memorial Hall, on Thursday, the 11th inst., Mr. ALFRED BROTHERS, F.R.A.S., Vice-president, in the chair.

After the minutes of the previous meeting were read and confirmed, Mr. J. C. Hathersley was duly elected a member of the Society.

Mr. JOHN SCHOLFIELD then presented to the Society a developing tray or box made of metal constructed to form a sink as well as a chemical chest, and a special vote of thanks was awarded to him for his very handsome present.

Mr. PARKINSON, of Bolton, at the request of the Chairman, promised, if possible, to bring to the next meeting a print or enlargement from a negative he had succeeded in taking, by the aid of the electric light, of a large group—the Choral Society of Bolton, and which has been noticed in the photographic journals.

Mr. GEORGE GREGORY then read paper a entitled "Artistic Photography."

Mr. S. W. LEIGH exhibited some very excellent photographs from 11 by 9 negatives printed upon unglazed drawing paper, and also the very handsome prize he had been awarded by the Amateur Photographic Association, and a print from his prize negative.

Mr. J. POLLITT explained that he had produced many prints on paper only slightly albumenized, which rendered them very effective for working upon afterwards, and notwithstanding the result was similar to those exhibited by Mr. Leigh, they were printed in much less time.

Mr. W. WATTS then read a paper entitled "Electro-Depositions in Connection with Photographs," and afterwards conducted some very interesting experiments, projecting the same on the screen by means of the lime light sciopticon, and exhibited very beautiful specimens of electro-depositions.

A vote of thanks was then passed to Messrs. Gregory, Watts, Leigh, and the Chairman, after which the meeting adjourned.

PHOTOGRAPHIC SOCIETY OF IRELAND.

THE usual monthly meeting of this Society was held in the Royal College of Science on the 12th inst., Mr. GEORGE MANSFIELD in the chair.

The minutes of the previous meeting having been read and confirmed,

Mr. COWAN showed in detail the preparation of gelatine emulsion, going through the actual process at each stage. This was done with a view of encouraging amateurs to prepare their own plates, and, by demonstrating the simplicity of doing so, remove the objection which is generally entertained. Three new members having been proposed for election, the meeting adjourned, after having inspected the collection of prints from which the presentation print to be issued by the Society was recently selected.

Talk in the Studio.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The first meeting for the Session 1880 will take place on Thursday next, Jan. 1st, in the large room of the Society of Arts, Adelphi, when the evening will be devoted to a lantern exhibition for the display of members' slides and others, after which Messrs. W. Brookes and F. A. Bridge (who will superintend the proceedings) will continue the entertainment. Tickets may be had of the Secretary, H. Garrett Cocking, High Road, Lee, S.E.

THE RIGHT HON. W. E. GLADSTONE.—As the Right Hon. W. E. Gladstone completes his 70th year on the 29th inst., about thirty of the leading Liberals of Lincoln have subscribed for a handsome birthday present for the right hon. gentleman, in response to an invitation from the Mayor. The gift is to take the form of fifty of the finest photographs of Roman, early Norman, Gothic, and mediæval architecture in Lincoln, which have been purchased and mounted, and will be handsomely bound in morocco. The first page will contain the dedication to Mr. Gladstone, to be followed by the signatures of the Mayor, the Sheriff, and others. It will be forwarded to Haverden Castle so as to reach Mr. Gladstone on his birthday.

To Correspondents.

R. W.—There is no lack of photographic colourists; the profession is, in fact, somewhat crowded. But the really skilful are generally in demand, and are kept fully employed; they are not very numerous. The wisdom of training a young person to such a profession depends entirely on circumstances, such as capacity, probability of having a connection, &c.

J. K.—To secure good collodion enlargements on opal requires some experience. The collodion should be tolerably ripe, and the bath in good condition. A pyrogallic acid developer is desirable: 2 grains of pyro, 30 minims of acetic acid, and 1 ounce of water will answer. A tolerably full exposure and rapid development will give you the warmest tones. A solution of chlorid of gold containing two grains in an ounce of water, neutralized by means of prepared chalk, will give a rich black tone; continue the application of the gold solution until the image appears the same at the back as the front. 2. We believe no license is required for the use of the double transfer process. Certainly none is required for enlarging.

MR. W. CRISP, of Chester-le-Street, writes to mention the very fine and rapid results he had seen produced on some gelatine plates prepared by Mr. Clennett, of West Hartlepool. It is very gratifying to hear of such satisfactory results on the plates prepared by a gentleman who has only recently commenced their commercial manufacture.

STEAM BURNISHER.—It was made to order. Mr. Calder's address is 179, Maxey Road, Plumstead.

F. HENLEY.—To make the emulsion into a pellicle, pour it out into a dish, so as not to exceed a quarter of an inch deep of the emulsion. Then allow it to dry. When nearly dry, cut it into strips; and when quite dry they will curl up from the dish in the form of pellicle. 2. Imperfect washing will leave an unnecessary salt present, a nitrate of cadmium or ammonium, or whatever base was in the bromide. 3. We have never measured the quantity necessary to coat a quarter-plate, but we have no doubt that the Doctor is right. Yes, 10 cub. cents. are equivalent to 2½ drachms.

S. B. M.—The reticulation you describe is very distressing, and there is, we fear, no cure for it. The best plan is to mix off the collodion with a newer sample which does not reticulate. You will often find such collodion very useful for mixing with a new unripe sample which tends to work thin and foggy.

W. J. CHAPMAN.—Yes, your statement of the case is correct. The chief novelty in the case in question is the arrangement for portability and packing.

G. L. M.—The distorted negative of which you send us a print is due to attempting to hasten the drying of the negative by heat. Gelatine, if it contain any moisture, will generally melt when brought into contact with heat, and if a film in any degree melt it is certain to run a little, and hence the distortion. The negative must dry spontaneously. This may be aided by a drying-box, or by keeping them in a room where there is a current of air.

A. L. E. D.—The price of the PHOTOGRAPHIC NEWS by post is 15s. per year, or 3s. 10d. per quarter payable in advance. The order should be sent to the publisher. To print on linen, sponge or soak it with a solution of five grains of common salt in an ounce of water. When dry, apply a 30-grain solution of nitrate of silver, dry, and print. Then fix and wash as usual. The price of the YEAR-BOOK is 1s., and 2d. postage.

J. C. STEPHENS.—YEAR-BOOK copy received. Thanks. We will write.



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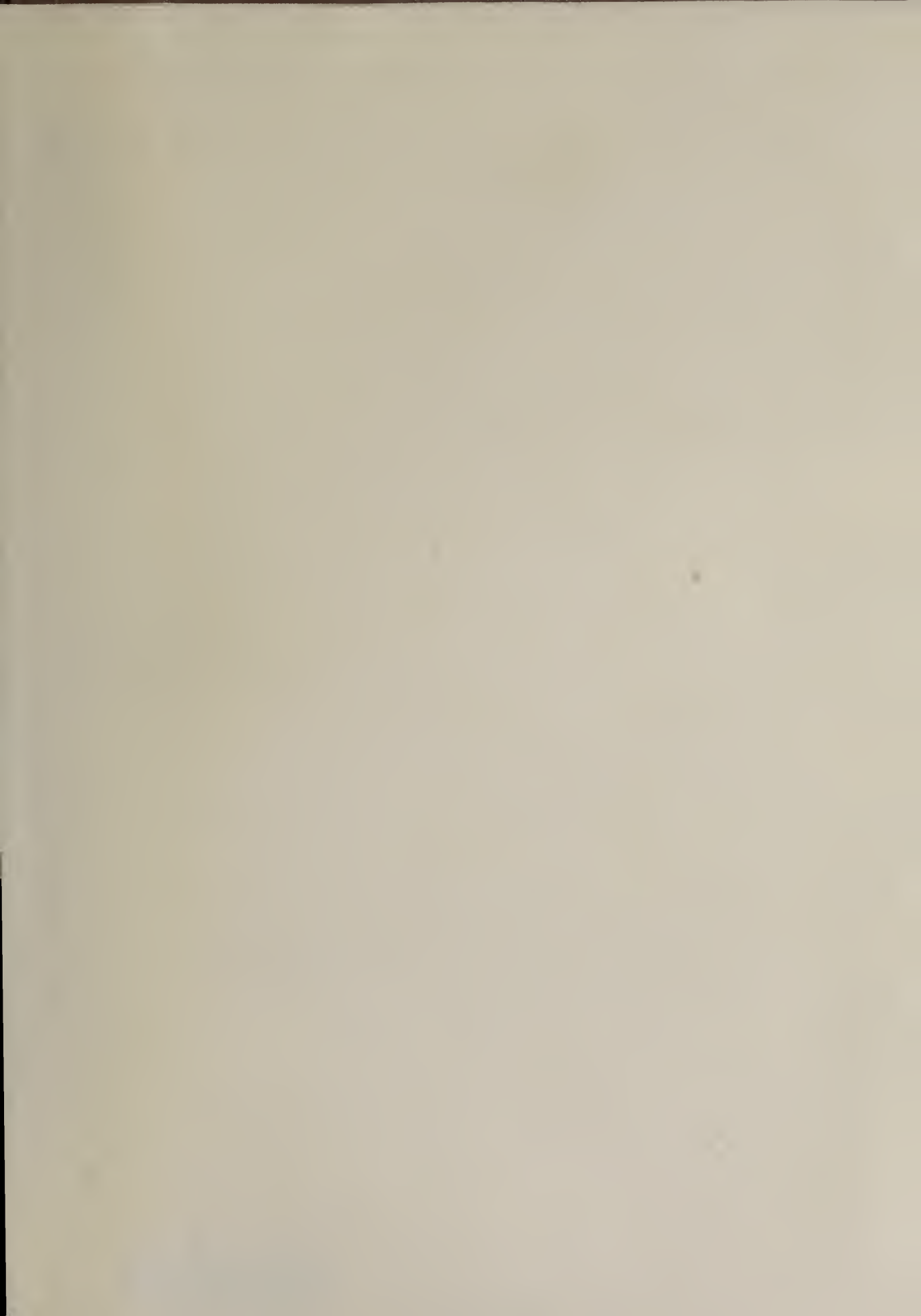
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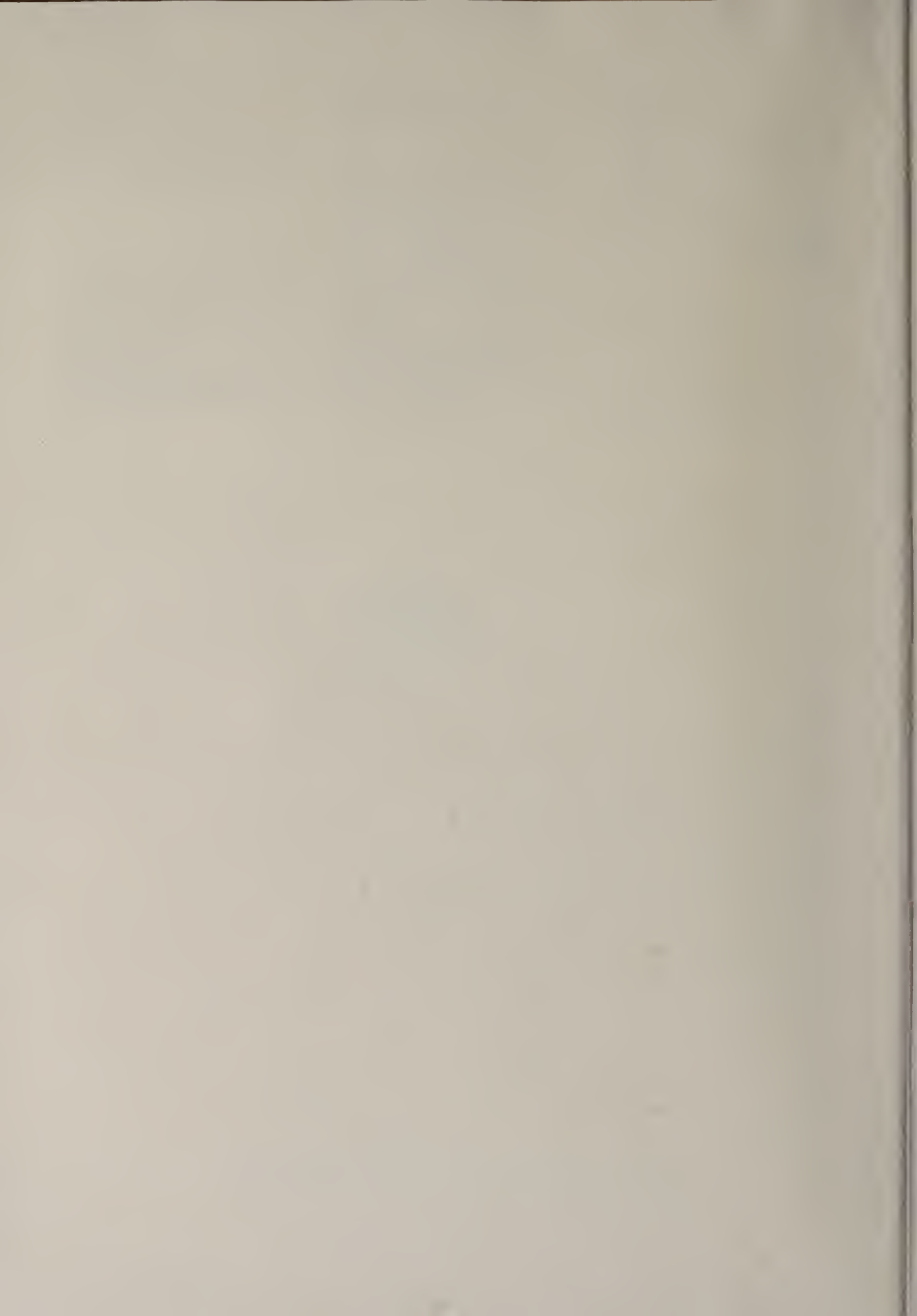
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